

3D

WORLD

INSPIRATION / EXPERT TUTORIALS / CD INSIDE

THE MAGAZINE FOR 3D ARTISTS

the art of anime

POSER MASTERCLASS Recreate this fiery
cover star from the DAZ model on the CD

FINAL FANTASY

Square Enix talks exclusively about
Advent Children - the full-length movie

ANALYSIS

20 years of CG in Japanese
animation: a retrospective



THE SECRETS OF STUDIO GHIBLI
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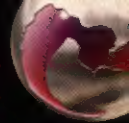


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COVER ARTIST

Adam Benton

RECREATING ANIME to any degree of success or personal satisfaction requires a fairly decent knowledge of its history. Our cover artist this month, Adam Benton, qualifies in this category, and uses his versatile skills with a range of software applications to construct some of the most emotive artwork we've seen. (He also produced our cover model for issue 32.)

Adam has recently completed work on the *Star Wars: Revelations* (2005) project, spending three years producing matte paintings, concept art, modelling and animation, and contributed his versatile compositing skills. He's also had work featured in the recent books, *Digital Art for the 21st Century: Renderosity* and *Digital Sci-Fi Art*.

"I cut my 3D teeth with *Bryce* and *Poser* more than seven years ago," he says, "but I've used *Cinema 4D XL* for virtually all of my 3D work during the last three years, along with *BodyPaint 3D* and an arsenal of third party plug-ins. *Poser* still gets used for a lot of figure work, and occasionally, *Bryce's* terrain editor sees some action.

"Illustration is still a primary passion, but the recent work I've completed for film, and some corporate motion graphics, has whetted my appetite for something more substantial. I have an itch to take a big step and apply for a job at ILM or WETA, but I'm not sure where I'd fit in (or if they'd have me!)."

www.kromekart.com



the art of anime

056 With a little help from our *Poser 6* tutorial, and a model of our cover star on this issue's CD, you too can create anime magic

Anime's 3D secrets

044 From cel animation to the rise of 3D - we look back over 20 years of CG in Japanese animation



072 From the creators of the Oscar-winning *Spirited Away*, Studio Ghibli reveals the secrets behind its latest animated feature, *Howl's Moving Castle*

KINGS OF THE CASTLE





Advent children

036 The highly anticipated Square Enix production of *Final Fantasy VII: Advent Children* is almost upon us. We take a look at the artist vs CG debate in detail



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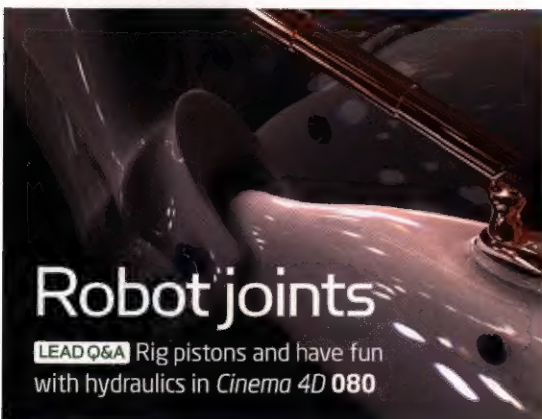
Akira

INSPIRATIONS Legendary 3D artist Pascal Blanché reveals his love for the anime classic that is *Akira* **121**



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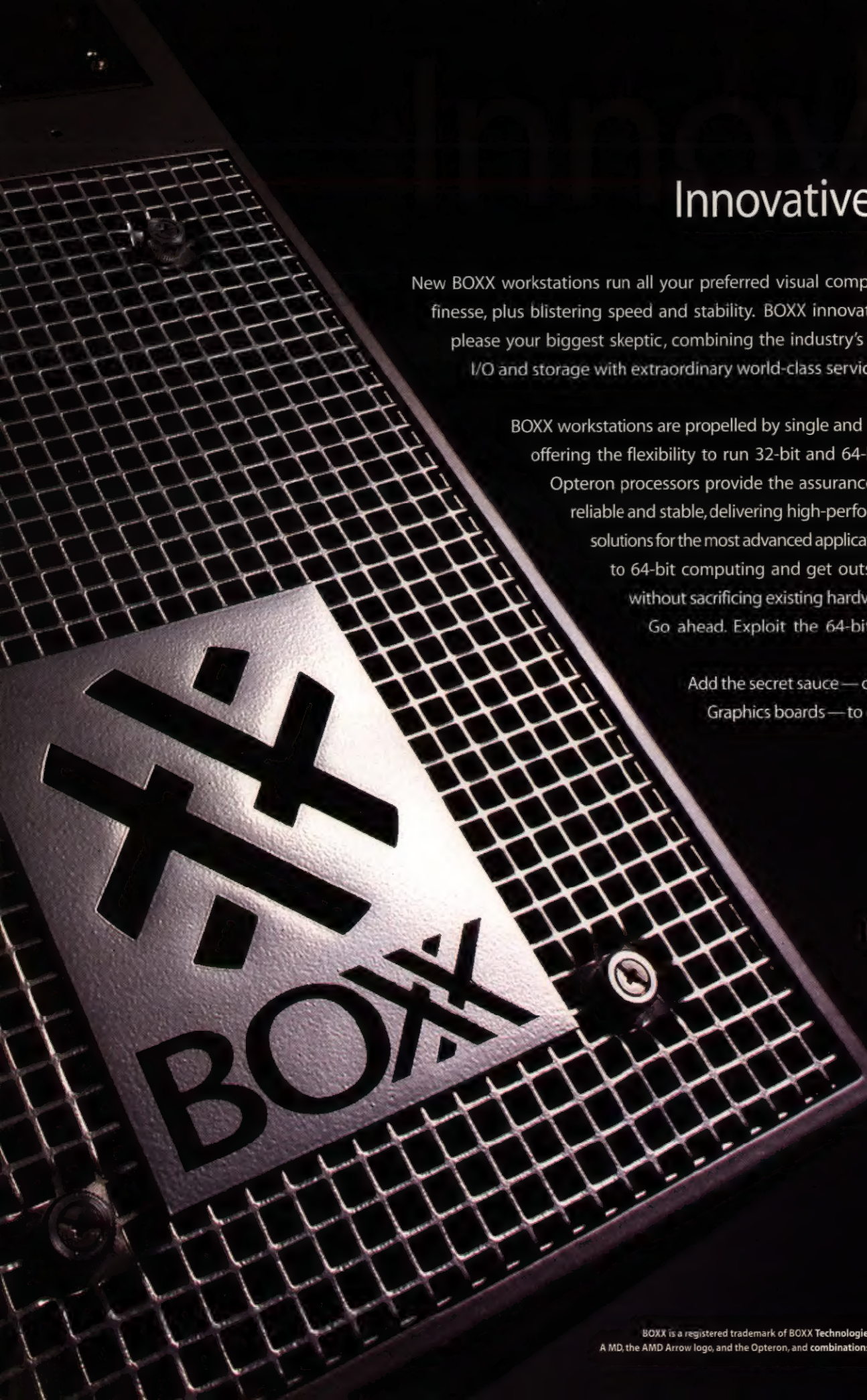
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ON THE CD

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DAZ 3D figures,
clothing & morphs
SEE PAGE 122



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3D World is brought to you with the help and advice of leading 3D industry figures

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European Representative, DreamWorks Animation
Shelley Page started her career in feature animation as Backgrounds Supervisor on Disney's *Who Framed Roger Rabbit?* She was one of the first artists hired to form DreamWorks Animation in 1995. She's now DreamWorks' European Representative, resourcing new talent for the studio.
www.dreamworks.com

JORDI BARES



Senior 3D Animator, The Mill
Jordi Bares worked for eight years in the games and film industries in his native Spain before moving to London in 2000, where he has freelanced at Jim Henson's Creature Shop and Passion Pictures. The winner of many awards, he was nominated for an Emmy for his work on the BBC documentary *Pyramid*.
www.the-mill.com

ANDREW DAFFY



CGI Supervisor, House of Curves
Andrew Daffy has worked in the CGI industry for ten years on projects that have accumulated over 30 awards. He was recently named one of Alias's *Maya Masters* for 2004. His new company, The House of Curves, will act as both a studio and a training school.
www.thehouseofcurves.com

ALEX MORRIS



Director, Hayes Davidson
Alex Morris qualified as an architect in 1990 and joined the architectural visualisation agency Hayes Davidson in 1996, having completed over 40 buildings across a number of sectors. He is responsible for many of HD's landmark images, including the UK's Millennium Dome and the Tate Modern art gallery.
www.hayesdavidson.com

JOLYON WEBB



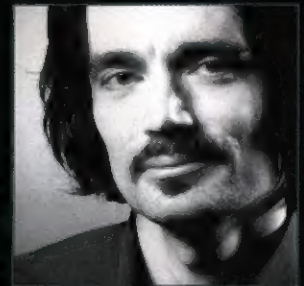
Principal Artist, Codemasters Software Company
Jolyon Webb moved into developing game art after years as a freelance illustrator. He works at leading videogame studio Codemasters as Principal Artist in the Central Technology Group, which is the company's internal research and development team.
www.codemasters.co.uk

AARDMAN ANIMATIONS



Scott Pleydell-Pearce, Bobby Proctor and Stefan Marjoram
Respectively CGI Animation Head of Department, CGI Lighting/Technical Head of Department and a Creative Director for the commercials department, Scott, Bobby and Stefan have over 20 years' combined experience at Aardman, working on a range of award-winning ads, idents and short films.
www.aardman.com

Editor's perspective



The first thing a British visitor to SIGGRAPH 2005 notices upon arriving in Los Angeles is the sheer scale of the place. As Virgin Atlantic flight VS007 swoops down towards LAX airport through a disconcerting layer of yellow haze, revealing the 50-mile sweep of the San Bernadino freeway, any thoughts of walking to the conference venue are quickly dispelled.

The second thing that the British visitor notices is that this year's show has something of a *Star Wars* theme. If this wasn't immediately apparent from the flyers advertising George Lucas's keynote speech, or the special conference session hosted by Industrial Light & Magic, the 20ft model of an X-Wing Starfighter that sits inside the doors of the LA Convention Center is there to give the game away. And the third thing is that the SIGGRAPH and *3D World* publishing schedules are not terribly well synchronised.

So while this month's column is being typed on a computer in the LACC press room, a tantalising two days before the official opening of the show, issue 69 actually takes you to the other side of the world: to Tokyo and the hub of the Japanese animation industry.

With Studio Ghibli's follow-up to the Oscar-winning *Spirited Away* finally showing in cinemas on both sides of the Atlantic, *3D World* is proud to bring you the first major English-language interview with the creators of *Howl's Moving Castle*. On page 72, Director of Digital Animation, Misunori Kataama, discusses the studio's design philosophy, animation pipeline and the extraordinary construction techniques used to create the walking fortress of the movie's title.

On page 36, we bring you another exclusive: this time from games company Square Enix, whose feature-length adaptation of the cult PlayStation title *Final Fantasy VII* will be released on DVD in September. With Enix vociferously distancing its new movie from 2001's ill-fated *Final Fantasy: The Spirits Within*, we talked to co-director Takeshi Nozue about movie tie-ins, the vexed question of photorealism vs stylisation, and why the studio has definitively *not* used facial motion capture this time around.

And if you ever doubted that 3D had a part to play in the hand-drawn world of Japanese animation, turn to page 44. In a series of revealing interviews with the legends of the industry, including Mamoru Oshii and Katsuhiro Ôtomo, we tease out the hidden connections between 20 years of innovation in computer graphics and the visual style of modern anime.

Next issue, we'll be back to the West - and to SIGGRAPH 2005. In the magazine itself, we'll bring you our considered analysis of the show, and the industry's reaction to its main announcements. But if you can't wait that long, the *3D World* team's rather more informal account of sleaze and sub-Ds in LA can already be found online. You can read our blow-by-blow account of the people we met, the gossip we overheard, and the drinks we drank while doing so, on our website, www.3dworldmag.com.

JIM THACKER Editor
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LETTER OF THE MONTH

This is a big thank you from X-BAM Illustration for featuring us as your 'Website of the Month' [Pre-Viz, issue 67]. I have to come clean: X-BAM is currently just myself, Alex Mallinson, but I have several friends in freelance illustration and animation and, should a larger job turn up, I'd manage it as a collective under the X-BAM banner, so it's hopefully not as fraudulent as it first appears!

The animation [a spoof of the Citroën 'Transformer' ad, featuring a rather less glamorous 2CV] came about partly because of a drunken conversation I had, and partly out of a desire to finally finish a project. So I set out to build something iconic, intentionally derivative and fairly realistic, and spent a good five days on it before balancing the animation with other work commitments. I'm really flattered by your kind review and was amazed to find that the 2CV is now pushing one and a half million hits.

I did have a brief chat with Citroën UK's legal department, and very nice they were too (I'm not obliged to say that by a writ, either!). I had foolishly used the Citroën logo on the original, and they deemed the slogan a mite derogatory, hence the two versions now flying around. They were happy with my alterations, but did add ominously: "we can't vouch for our colleagues in Paris ..."

As for your suggestion that viral advertising agencies should snap me up, I have indeed been approached by two agencies and have now completed a brief FX shot for a viral campaign. All the best and, once again, many thanks!

Alex Mallinson, X-BAM Illustration

What with \$2million in seed funding for the *Dominator* remake last month, we're currently batting a perfect average when it comes to securing work for the artists featured in the magazine. Anyone wishing to try *3D World's* particular brand of promotional magic should contact us at the usual address with suitable incentives, marking all correspondence 'Editor's benevolent fund'. Unmarked bills only, please - it's so much more convenient than Diner's Card.

Congratulations to Alex, who also wins a copy of the excellent *Exposé 3* for his trouble. His 2CV animation isn't the only new spoof of the Citroën Transformer advert, as you'll discover by turning to page 28.

LETTER OF THE MONTH

Congratulations to Alex Mallinson, who wins a copy of *Exposé 3*, published by Ballistic Publishing. The third in a series of annual surveys of the world's best new digital artwork, this coffee-table book contains 208 pages of imagery, featuring the work of 181 of the industry's leading artists. The content spans the worlds of 3D, game design, digital illustration and architectural visualisation.

www.ballisticpublishing.com



● A still from Alex Mallinson's Citroën-sanctioned spoof of the Transformer-inspired ad. Someone snap this man up for a viral ad campaign. Oh, hang on a minute ...

MODEL BEHAVIOUR

> I'm writing in response to your 'Letter of the Month' in issue 67 [about whether 3D printing will replace hand sculpting in the creation of fantasy miniature models]. Hermit, I don't blame you for being wary of the future but, in this case, I think your fears are needless.

It's a mistake to think that all people will inherently choose computer modelling over hand modelling, or that the leap from hand modelling to computer modelling is a one-way street.



● Will 3D kill traditional sculpting, or could new devices result in a backflow of CG artists into physical modelling?

On the contrary - speaking as a man who got into CG modelling specifically to hone my pen-and-paper drawing skills, I think it is just as likely that the burgeoning popularity of 3D modelling, especially with new haptic tools such as the Phantom Omni, will eventually result in a backflow of CG artists into the world of physical modelling.

I've done both, and though I hone my technique on the computer, I get more satisfaction out of the things I make with my own two hands. As with ebooks and physical books, the former will expand the field of talented artists working on their skills, but the latter will remain the field in which lasting reputations are established.

Michael B English, Washington

Thanks to everyone who wrote in in response to Hermit's letter. This subject is now closed for correspondence, but is still open to debate on our website. To have your say, visit the 3D World forum (<http://forum.3dworldmag.com>).

DEMO HELL

> I enjoyed your recent feature on demo reels [3D World, issue 60]. I have to call you on a technical point, however: there's no such thing as 'NTSC tape'. As a Brit working in the US, and having worked in the multi-broadcast format DVD area, I know a thing or two about this subject.

VHS tape is just magnetic tape, and there's no difference physically between PAL and NTSC stock. You can even record a PAL broadcast over a tape that's previously been used to record NTSC output, and vice versa. (I've done this myself many times.) What is different between the two systems is the resolution, frame rate, pixel aspect ratio, refresh rate, and field order.

For most people without some technical understanding of these things, converting your reel from PAL to NTSC is easier said than done, even with access to *After Effects* or other suitable pieces of software.

While it would be nice if getting your reel from PAL to NTSC were as simple

as buying different tape stock, that's unfortunately not the case.

Steve Davy, USA

That sentence should indeed have read 'NTSC format'. Thanks to Steve for pointing this out. If you want a summary of the difference between PAL and NTSC video standards, you can find one at www.wikipedia.org.

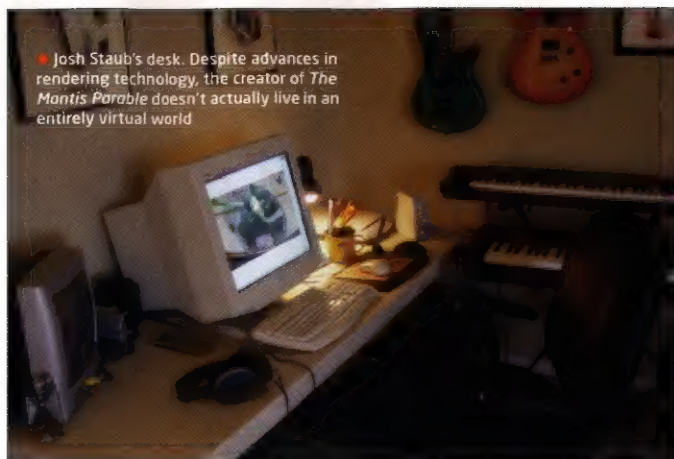
STUPID QUESTION

> This may sound like something of a stupid question, but I've been having an argument with my girlfriend regarding the 'Diary of a Short' article in issue 66 of 3D World.

For some unknown reason, she seems convinced that the photo of Josh Staub's desk on page 110 is, in fact, a 3D render. She won't back down on this and it's becoming quite annoying.

Could you please confirm that it is actually a photograph? Thank you in advance for saving my sanity.

Maurice, via email



You're quite right, it is a photograph. Now, have we just saved your sanity at the expense of your relationship?

BLENDER BENDING

> Re: 'Buyer's Guide', issue 66.
Could you mention that the main *Blender* forum is actually located at www.elysium.com, and not CGTalk? I've looked over your magazine a few times and you seem to give *Blender* very little in the way of attention. Is this a reflection of your opinion of the software, or is it more the case that the 3D industry is such a four-horse race that you simply don't think that CG professionals would want space wasted on anything other than their (bloody expensive) packages of choice?

Blender may not be up to the strength of the commercial packages, but I really think that it offers an excellent way into the CG world. I almost fell off my chair when an animation student told me what the commercial applications were charging for their student licences.

Bob Downes, via email

We realise that CGTalk isn't the only *Blender* forum online, and certainly didn't mean to imply that this was the case. We simply wanted to make the point that the 3D industry's premier online community has a section dedicated to the software.

But it isn't entirely fair to say that we give *Blender* very little attention in *3D World*. The application has featured in the 'Q&A' section four times since issue 62, including the current issue, and is scheduled for a longer tutorial. Our resident *Blender* expert, Bassam Kurdali, is

also working as Animation Director on the upcoming 'open movie' *Project Orange* (Pre-Viz, issue 68), and will be reporting on it for the magazine later in the year.

PRIZES, PLEASE!

> The 'Creative Challenge' on the forum is ace, especially the current one, but I think the prizes are a bit of an afterthought and are very rarely mentioned. This makes the challenge pointless to some people.

I know that prizes are tricky for events organised outside the magazine, but surely the winner's details could at least be published somewhere in the magazine? It wouldn't even need to be every month, just in the next available issue. What better way could there be to raise the profile of the *3D World* forum?

Buckie, via the forum



• Forum user mynewcat's winning entry in our latest 'Creative Challenge'. Winners of this bi-monthly art contest will now receive a copy of *Genetica 2 Pro*, worth \$399

No sooner said than done. (At least, assuming that your definition of 'soon' is 'within three months of the request initially being posted'.) As visitors to the 'Creative Challenge' section of our forum will discover, each winner of this bi-monthly art contest will now receive a copy of the node-based texture-editing package *Genetica 2 Pro*, worth \$399 (about £230). More details of the software can be found in our review on page 102. One of the two winning entries in 'Creative Challenge 9', mynewcat's 'Ideal Home' image (the other came from a1m1m25) is at the bottom of the page.

A JEDI WRITES

> Barbara Robertson made a mistake in the top picture caption on page 32 of her *Star Wars* feature (Issue 66). Capital ships were involved in the Battle of Endor in *Star Wars: Episode VI - Return of the Jedi*.

Greg, via email

Oops. In punishment for this error, our fact-checking staff have now been entombed in carbonite and banished to the furthest reaches of Tatooine.

OUT OF DUCK

> Would it be possible to have a model of the duck-like figure from issue 54 [page 45] from *The Ugly Duckling* and Me? PS - I love your magazine!

Marc, via email

In a word, no.

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Jonathan Clements, Jasper Sharp, The amazing Adam Benton

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EXHIBITION

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IMAGE OF THE MONTH

Congratulations this month to **Michal Kotek**, who wins a copy of the *Extreme Hires HDRi* library, worth \$119. This prize is supplied by ART VPS, creators of the powerful PURE hardware 3D rendering cards. www.artvps.com

**MICHAL KOTEK Robobabies****3ds Max 6, Photoshop, V-Ray**

"I was born in 1987 in the Czech Republic and live in the capital city, Prague. I studied 3D graphics intensively from 2001-2002, and am now in the final year at the High School of Applied Cybernetics in Hradec Králové. Occasionally, I work as a 3D or 2D freelancer. I mainly look for inspiration on the Internet - for example, CGTalk forums and the homepages of some CG artists and classic 2D artists. When I was starting out in the world of 3D graphics, works by Michel Roger were a great source of inspiration for me. In the future, I'd like to start my own 3D studio and work in films and adverts."

I needed to create a charming little figure to represent [online design and animation project] AllWorld.cz on its web pages and other presentation materials. I considered many types of figure, starting with creatures and ending up with caricatures. Then I remembered that I created a model of a combat robot with a 'bad' face a few years ago. My friends suggested I should create a 'good-faced' robot, too. I started to think about it and drew a lot. Finally, I modelled a little robot, which became a key part of the AllWorld.cz web design. These three little robots in the picture are actually children of the good-faced robot. They represent particular categories of the web pages, and took about a week to create."

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EXHIBITION

COVER STORY

Maya, Photoshop

"I'm 17 and live in Lebanon. I began using *Maya* two years ago and soon became addicted. I modelled this portrait after reading your skin tutorial in issue 65 (although it was written for *LightWave* users), creating the colour map, the bump map and the reflection map in *Photoshop*. I like to model organic characters, and try to make them appear close and friendly, mainly through the expression of the eyes."

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Send us your exhibition images | For postal address, see page 9



WANG JIAN Grey sky on the city
3ds Max, V-Ray, Photoshop

"I work as a designer and teacher in the Graphic Research Centre of Fuzhou University in China. Inspired by a scene I saw on the street, I was left with the strong desire to recreate it. I wanted to express the complexity of my feelings at the fact that everything in the world changes so fast (and especially that vitality and life will be gone one day). The grey feeling in the picture is the kind of effect I like. I spent a lot of time achieving a better perspective with the camera in 3ds Max and, eventually, this is what I came up with."

[e] artwj@163.com

TANG WENJIA The Sky of 14 Years Old
3ds Max 7, Brazil, After Effects 6.5,
Photoshop 7

"I'm from China. As a junior student of Xi'an Academy Of Fine Arts, I specialise in visual arts design and produce artistic work. I think UV unwrapping is the most difficult thing to do when creating the images - it takes me a lot of time and energy. But I think a great masterpiece shouldn't just parade your skills or the technology available to you, but should also be artistic, fresh and full of vigour. I like playing games and would like to develop this aspect in them."

[e] rhythmlee915@hotmail.com





JOHN SHAKESPEARE Little Ghouls, Toys, Toys Undead
Softimage|XSI, Photoshop

"I'm employed as a cartoonist for the Sydney Morning Herald newspaper. Most of my work involves 2D illustration, but I also regularly create 3D cover images for use with the Herald's various sections, using Maxon's Cinema 4D software. The image *Little Ghouls* was a development of an earlier image I'd done, *Toys R'Undead*, where I turned some cute toys into zombies. I'm currently working on a 3D children's book, and would love to collaborate with an animator."

[e] jshakespeare@smh.com.au
[w] www.johnshakespeare.com.au



Send us your exhibition images | For postal address, see page 9



KEREM ÇOBAN Stop Wars, Bug Eyed
3ds Max, Photoshop

"I'm 28 years old and have worked with 3D for about two and a half years, specifically in architectural designs. Any architectural structure or building, whether historic, futuristic or fantastic, inspires me. I don't really face technical challenges – what I do face is my selective personality. I always want the best of the best and therefore, although people say a piece of work is good and well done, I still work on it (change, erase, maybe redesign it) a dozen times again and again until it fits the image in my mind. In the future, I want to be an artist known worldwide in CG."

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Creature Shop closes its doors

ANALYSIS But was it the government that killed The Muppets? As Jim Henson's London division shut up shop, the industry hit back at the UK's current system of tax breaks for 3D studios

On 15 March, The Jim Henson Company celebrated 50 years of business. In July, it shut down its London division, issuing a press release that began: "UK production environment leads to closure."

"We are grateful to the British film industry for its important place in our history," said Henson's President and COO Peter Schube speaking from the company's Hollywood Office. But the official reason for the closure? Unfavourable exchange rates, and "the absence of concrete tax incentives in the UK production market."

Jim Henson established his London Creature Shop in 1979 while working on *The Dark Crystal*. From animatronics, the studio moved into visual effects, accumulating a list of credits that includes *Babe*, *Lost In Space*, *101 Dalmatians*, *The Hitchhiker's Guide to the Galaxy* and of course *The Muppets* (whose rights are now owned by The Walt Disney Company). When it closed, the Creature Shop had 23 full-time staff and a sizeable pool of freelancers operating out of its Camden offices. Business continues as usual in the LA and New York studios – but what does the closure say about the state of the UK industry as a whole?

Sean Lewkiw, a freelance 3D artist, moved from the US in 2002 to work for the Creature Shop, acting as VFX Supervisor on its final feature film, *The Water Giant*, which wrapped up in May. "We were told [the closure] was due to the lack of tax breaks," he told *3D World*. "I just don't see why people would do effects work in the UK. You can do it for half the cost in Canada or Australia."

The Jim Henson Company may have lost an arm, but according to Dave Mousley, MD of Manchester Studio Red Vision, so has the

industry. "When a [rival] company like this closes, we don't throw our hats in the air. It's a tragedy for this country. We need more Hensons, Mills and Framestores – we need to be like the US, with big players like ILM and Pixar pulling together."

For Mousley, the industry needs building up. "We need large companies offering placements, and many small outfits with a cross-fertilisation of talent. Canada is a classic model. When the UK government cut tax breaks, many productions were purged. We're working on a British project called *Floating Islands* – but 85 per cent of it's being produced in Canada, as it can get subsidised there. People have been forced to go abroad, but if projects were done here, income tax and corporation tax bills would be paid – resources for the UK."

The tax breaks in question are Section 48 (which affects

lower-budget firms) and Section 42 (higher-budget). At the end of 2004, the government closed a loophole in the Section 42 tax break, stopping companies from 'double-dipping' (claiming twice). This, coupled with the dollar's weak exchange rate has made the UK's tax climate less competitive

"IT'S A TRAGEDY FOR THIS COUNTRY. WE NEED MORE HENSONS, MILLS AND FRAMESTORES"

DAVE MOUSLEY, RED VISION

Bruce Steele, Head of Special Projects at Glassworks, is as angry with the government. "We're all talking about Henson's because it's in the press, but other postproduction studios are closing, too. The government just doesn't understand what we do. If you wanted to be a rock musician, would they subsidise you? No. But look at how much money it brings into the UK. It's the same with our industry. Commercials are being shot in Portugal instead of London, because it's cheaper!"

Louise Hyssey, 3D Producer at Rushes, is positive about the future for UK firms, but agrees that times are hard. "Projects have

PLUGGED IN

STOP PRESS

This issue of *3D World* went to press two days before SIGGRAPH 2005 opened its doors. In the Pre-Viz section this month, you can find our previews of some of the biggest products scheduled to be announced at the show, including *Maya 7*, *XSI 5* and *3ds Max 8*. Arriving just too late to make the news deadline: *Animation Master 12*, *LightWave 8.5*, and a host of other apps. Read about them – and more – in our show coverage next issue. www.siggraph.org/s2005





Image © Rex Features

• "What do you think of the new tax breaks?" "Rubbish!" As the demise of London's Creature Shop became public, commentators were quick to cite the UK's tax climate as a key factor in the closure

FEED > < BACK

We want to hear from you on the issues affecting 3D artists, so once you've read our main news story on the facing page, why not visit the 3D World forum and post your reaction to it online?

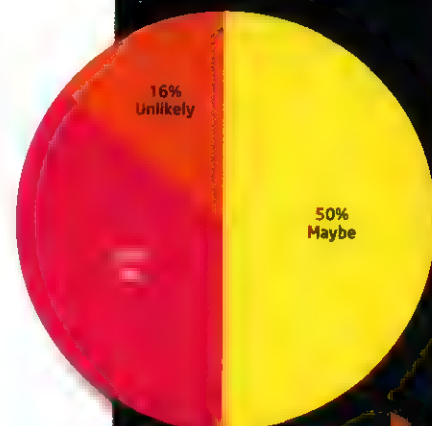
This issue, we'd like your opinion on the closure of Jim Henson's Creature Shop in London. Do you think this is indicative of increasingly tough times for the industry? What do you think is responsible, and what would you like to see change?

The question we'd like your opinion on is this: "Is the UK government to blame for the closure of companies such as Jim Henson's Creature Shop?"

- **Absolutely** - there are not enough tax incentives or funding. It's not surprising that more and more work is being farmed out to Canada, New Zealand or India
- **Possibly** - it's partly down to the government, but it's also the responsibility of the industry itself
- **Unlikely** - the problem is low-quality outfits offering cheap solutions, and directors choosing low cost over technical skill and experience
- **No** - it's more about how the companies handle themselves and their work

LAST ISSUE: THE VERDICT

"Do you think Apple's decision to switch to Intel processors will affect the 3D software market in the long term?"



Have your say | <http://forum.3dworldmag.com>

TALKING POINT | The current climate



"There's been a lot of uncertainty about what the government is doing to filmmakers. They tightened the rules to stop people abusing tax shelters and it's caused a problem. Many studios farm out background tasks to India, and we're looking into that. The UK is not as attractive a place to make films as it used to be."

Paul Franklin, VFX Supervisor, Double Negative



"People are setting up in business around the corner, stealing licences and undercutting people, but how smart is the director who employs them? Do they know they're working from their bedroom, with no overheads? 3D is complicated, highly technical and expensive. It can't be done on the cheap."

Bruce Steele, Head of Special Projects, Glassworks



"It was a very sad day when Henson's closed. Rushes has worked with them many times. We will all continue to face the threat of competition from abroad, but I don't feel it's all doom and gloom - the UK still offers some of the best creative talent worldwide. And while we can maintain that reputation, we're still in with a chance."

Louise Hussey, 3D Producer, Rushes

fallen by the wayside due to recent tax reforms in the UK and cheaper deals elsewhere in the world. The climate is tough for middle-sized operators being squeezed for rates from the 'bloke in his bedroom' at one end versus the ability of large houses to pull in large features."

So is there a good survival plan for smaller studios? "When times are good, some companies over-extend themselves without a long-term plan for when that work dries up," says Animation Director Marc Craste at Studio aka - a Soho studio with a staff of 30 that has been running since 1982. "We strike a balance between work that raises our creative profile and bread and butter jobs."

MD Richard Scott of Glasgow's Axis Animation concurs, adding that his "small to medium sized" studio is having its best year yet. "The key, for us, is to work in different areas. Henson had its eggs in one basket, and we deliberately launched in 2000 with a threefold model: commercials, videogames and broadcast."

The UK Film Council declined to comment specifically on the Henson's closure but pointed to the weak collar as a primary factor in the current economic climate. The Treasury also downplayed the role of the recent tax changes, telling 3D World: "[Domestic] film reliefs are very generous and they are only one factor in a decision whether to locate in the UK - the UK film industry is internationally renowned for its world class skills and infrastructure. Action in the 2004 PBR was taken to stop film reliefs being abused in a way they were not intended. Had the government not acted in this way, the cost of providing reliefs would have been untenable. The current reliefs will remain in place until 31 March 2006 at least, and there will be formal consultation on replacement reliefs. The UK Film Council welcomed the announcement and the invitation to be involved in the development of the new tax reliefs."

www.henson.com

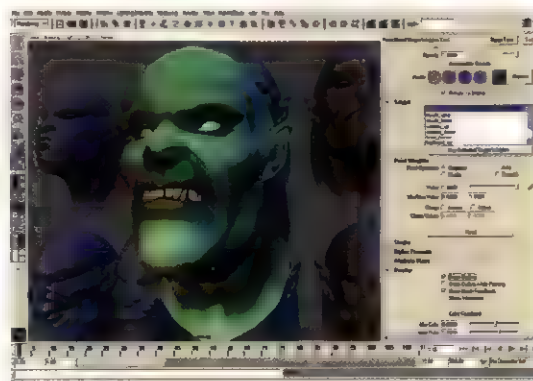
Maya 7 unmasked

SOFTWARE New Toon Shader and layer rendering options feature alongside varied list of features aimed at next-gen game developers

Maya 7 is intended to provide games studios with a "foundation for next-generation development," Alias has revealed. "It's not just a tool for now - it's a tool for 18 months down the line," said Entertainment Channel Manager Andy Payne, speaking at the company's UK press briefing two weeks before the new software was officially unveiled at SIGGRAPH.

Along with improvements to the polygon modelling and UV mapping toolsets, *Maya 7* contains several new features aimed specifically at games artists, including a new interface for the ASCII shader language, and integration of the CgFX plug-in. *MotionBuilder's* full-body IK solver has also been integrated within *Maya* - the first convergence between the two products since Alias acquired *MotionBuilder* last year.

Whereas *Maya 6.5* was sometimes criticised as having few headline features, particularly those aimed at visual effects artists, the company is describing *Maya 7* as "an across-the-board update," citing such tools as the new Paint Effects-compatible Toon Shader, and the ability to assign separate shading attributes (or even different render engines) to separate render layers, facilitating the set-up of common passes such as shadows or specularly



● *Maya 7's* improved Blend Shape functionality: just one of a set of new features directed at character animators and games artists

Maya 7 is due to ship in Q3 2005. Pricing remains unchanged at \$6,999 (£4,899) for the *Unlimited* edition; \$1,999 (£1,499) for *Complete*. Look out for early user feedback in our SIGGRAPH coverage next issue

www.alias.com

PLUGGED IN

3DSOM PRO
Canon's 3D Software Object Modeller (*3DSOM*) software has been given a new lease of life. The product, which creates high-quality 3D models from photographs of a real object, has been taken on by start-up Creative Dimension Software and enhanced in several key areas. The new *Pro* edition adds a range of tools for automating the time-consuming processes of importing reference photographs and creating masks, plus surface optimisation, incremental texture generation, and improved Web export. *3DSOM Pro* costs £1,757, including VAT. www.3dsom.com



SHAKE 4

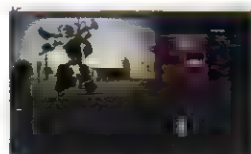
SOFTWARE Apple aims for bigger slice of visual effects pie with upgrade to pro compositing

SHIPPING NOW, *Shake 4* features 3D multi-plane compositing, cutting-edge optical flow image processing and a high level of integration with *Final Cut Pro 5*. A new OpenGL-accelerated 3D multi-plane compositing node allows VFX artists to composite live action and 3D CGI layers with added realism. As it's integrated into the node view, Apple claims that 3D compositing works with the same flexible user interface as every other operation, and is as fast as 2D operations.

Shake 4 also offers the ability to position, rotate and animate unlimited layers and cameras in 3D space. New optical flow technology uses pixel-by-pixel image analysis to create smooth retiming and

automatic stabilisation. Users can easily adjust the speed of any clip, as well as remove camera jitter from static shots and correct uneven pans across a scene without setting tracking points. Integrated Truelight monitor calibration maintains colour consistency between the screen and the final look of the film, while distributed visual effects processing is also now available

www.apple.com/shake



● *Shake's* new motion estimation tracks an image pixel by pixel in order to create 'new' frames

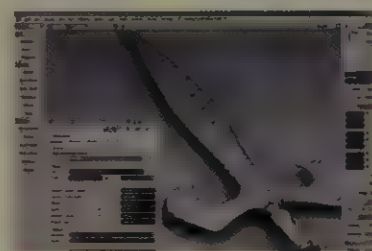
Softimage|XSI 5

SOFTWARE Avid's 3D animation software gets the SIGGRAPH makeover, with a rebuilt core, new physics, new tools and cinema-quality normal maps

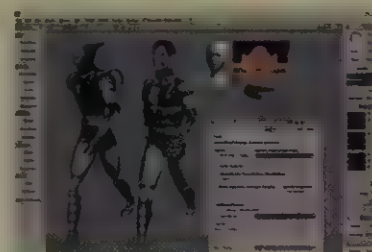
Due to be announced during SIGGRAPH 2005, *Softimage XSI 5* has been recreated with a gigapolygon core that takes full advantage of both multi-processor and multi-core 32- and new 64-bit platforms. Version five also introduces a comprehensive set of *Maya* migration tools, advanced cloth and flesh simulation and high performance rigid-body dynamics, while the *mental ray 3.4* renderer is tightly integrated into the new system. Also new are film quality effect normal maps based around a single-click workflow, while the new *XSI* Generalized Attribute Transfer Operator ('Gator') can easily transfer any surface properties between models, regardless of complexity or topology.

"This latest version of *XSI* is designed to handle the expected tenfold increase in complexity facing 3D artists, both in game development, visual effects and CG feature films," said Patrick Greene, European Product Manager for *XSI*. "Rather than slowing artists down with repetitive, time-consuming tasks, tools like *Ultimapper*, our new normal map feature, and *Gator*, will enable artists to focus on what they do best: creating stunning visuals."

Priced from £1,291, *Softimage XSI 5* also introduces organic modelling tools that offer more intuitive sculpting workflow. There's also top level animation tools that allow rapid animation blocking and editing in just a few clicks, as well as an integrated tools development environment.



XSI 5's *Ultimapper* can create cinematic-quality maps in a few clicks, generating normal, ambient occlusion, difference, light, and albedo maps



Gator attribute transfer is ideal for combining models, allowing completed, textured, animated models to be merged without losing vital data

WEBSITE OF THE MONTH

In a New York minute, everything can change. Don Henley may have been right, but how much of a story can you get across in a 60-second film? This is the challenge posed by the New York Minute Film Festival, an online event that's open to new and established filmmakers. Celebrating the art of rapid-fire storytelling, the festival is being funded by Manhattan design studio Convergence, and prizes will be awarded in five categories: animation, drama, comedy, experimental and music video. Winners will be competing for cash and prizes, a chance to attend an NYC screening and to have their movie included on the festival's DVD.

The competition is open from now until 1 October, and it will cost you \$20 for each movie you send in. Ten finalists will be chosen by November via an online ballot open to all visitors to the website. These will be whittled down to five overall

winners by a panel of artists, celebrities and industry pros.

Further sites...

www.convergence.com

This ambitious new site aims to put as much info as possible about all things arty in the UK: lists of events, artist profiles, directories of businesses - all in a down-to-earth way. Use it to buy an original piece, promote your event or showcase your 3D artwork.

www.atomfilms.com

With *Charlie and the Chocolate Factory* now showing in cinemas around the world, what better time to revel in *The Talented Mr Tim Burton*? This is what Atom Films thought when it placed Burton's popular animated *Stainboy* series in its 'Spotlight' section, showcasing the funniest superhero in the world.

EIAS 6

SOFTWARE Company claims Hollywood-style 3D graphics and the fastest renderer on earth for venerable package

ELECTRIC IMAGE Animation System (EIAS) 6 is now shipping available as a full product or as an upgrade to EIAS 5.5. The new version features enhanced OpenGL speeds, dramatically improved texture controls, subsurface scattering, and a real-time scripting engine (XP 3.0). The system comprises a suite of applications that includes Animator, Camera,

Renderama and Radiosity all updated for version 5.x. Drawing performance has been improved thanks to enhanced OpenGL (redraw speeds 3 to 6 times faster) and transparency support, while the new Preview Light Control feature optimises the lighting in the scene.

Electric Image Technology Group is also announcing that customers who purchase EIAS 6 will receive a free upgrade to EIAS 6.5 which is expected to ship in mid-September with two major feature enhancements: a new global illumination system integrated into Camera, as well as support for the Kaydara FBX format. The full version of EIAS 6 costs \$895.

www.eitechnologygroup.com



● EIAS 6 brings improvements to animation curve control and display

Killer animation. Break-neck speed.

Alias MotionBuilder 7, the world's leading productivity suite for 3D character animation, gives technical directors and artists the ability to handle the most demanding, high volume animation challenges.

New and improved character animation functionality and exceptional productivity enhancing features make MotionBuilder 7 a complementary package that can improve any existing production pipeline.

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3ds Max 8 unveiled

SOFTWARE Games-oriented upgrade brings greater asset management, UV editing enhancements and a character motion functionality boost

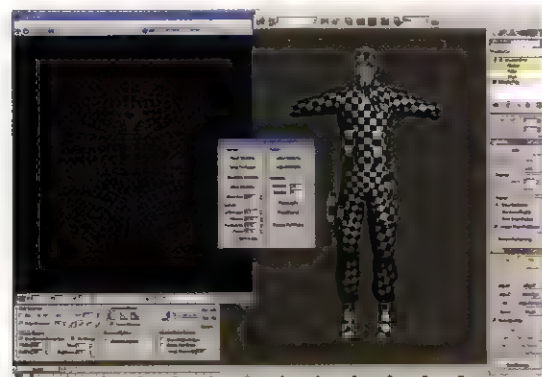
Autodesk has released details of the latest version of *3ds Max*, with particular emphasis on texture mapping, rigging and character animation. Version 8 also places more importance on integrating *3ds Max* into the professional 3D pipeline, focusing on asset management and advanced scripting capabilities. Most of the new features are aimed squarely at the next-generation games market.

The enhanced character animation features include motion mixing for *3ds Max* rigs, increased motion-capture support, and a new XML-based file format intended for motion re-targeting and mapping data between characters. There are also enhanced UV features such as new 'relax' methods, which match the

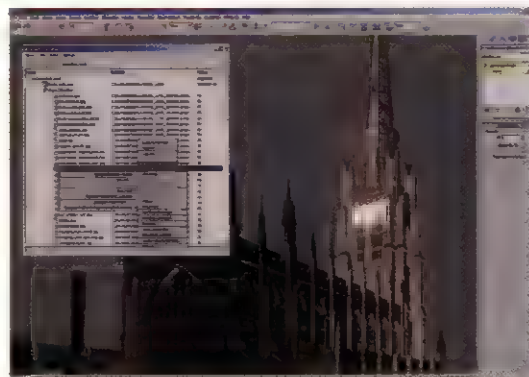
shape proportions of UVs to object geometry, along with what promises to be a highlight of this release: a Pelt Mapping feature that helps remove any deformations in the texture mapping. This new tool, which allows for the skin to be sliced, unwrapped and flattened out ready for painting, has certainly already won the admiration of CG artist Pete Draper: "It really saves a lot of time in the texturing process, as users don't need to keep splitting up meshes as much to get the mapping looking good." In addition, a new asset management system includes an asset tracker and *Vault*, Autodesk's asset management solution.

3ds Max 8 will be available in autumn 2005 for £2,695 / \$3,495, with upgrades costing £595 / \$795

www.autodesk.com



● Pelt Mapping turns three-hour texture mapping tasks into three-minute tasks, enabling artists to quickly unwrap the UV coordinates of geometry using custom-placed seams



● Version 8's new Asset Tracking function gives artists greater control and access to content, with enhanced and expanded capabilities to cross-utilise and 'repath' assets

PLUGGED IN

ARTLANTIS R
CAD artists looking for a fast rendering solution for still images will welcome Abvent's release of *Artlantis R*. The company claims the low-cost standalone tool features the same ease of use as its original *Artlantis R* product, but also adds some innovations. These include selective display acceleration for interactive handling of scenes, a PostCard function featuring simple drag-and-drop shader application, a powerful objects manager and the *RayBooster* raytracing calculator. The £345 / \$595 / €495 product also features Abvent's *FastRadiosity* engine.

www.artlantis.com

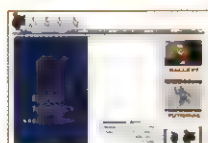


PLUGGED IN

ANIMANIUM EXPRESS

This new IK system works as a standalone application, or as a companion product to major 3D tools. Able to manipulate bone data from *3ds Max*, *Maya*, *Character Studio*, *XSI* and *LightWave*, the software allows virtual motion capture and uses a pose to determine workflow. *Animanium Express* costs \$99.

www.animanium.com



SketchUp 5: it's what you asked for

SOFTWARE New version introduces user-requested features, interface enhancements and export functions

@Last Software has released *SketchUp 5*, the latest version of its design application that enables you to create rough 3D scenes quickly and easily.

It offers The Sandbox - a set of new terrain tools - as well as an expanded Components Library, enhanced sketching tools and an improved user interface. There are also improvements to file import and export in the new release - a boon to the many *SketchUp* users who commonly use it to 'rough out' models before importing them into *3ds Max* or other such applications.

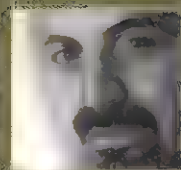
The Sandbox allows the projection of 2D geometry onto complex 3D surfaces, providing a simple way to model terrain and similar organic shapes, and to add roads. The Components Library jumps from 145 items to more than 3,000 design objects, including organic objects such as people and animals. Sketching tool improvements include depth-cued edges; an End Points tool and transparency maps. *SketchUp 5* is available online for £295 / \$495 / €425.

www.sketchup.com





Letter from Hollywood



Despite, or maybe because of, the large numbers involved in feature films, it's hard to make money from producing movies. Or, to be more specific, it's hard for movie studios to make money from producing movies. I seem to recall that film studios are lucky to return three to five per cent on their capital, which is not much more than they'd get if the money was put in a bank.

The individuals doing the actual work are fairly well paid. To some degree, this is because every film anyone works on may well be their last, so the unpredictable nature of your income is in some measure compensated for by the size of the cheques.

However, games are very different, and in substantial ways. By most accounts, the games industry is bigger than the film industry (\$25 billion worldwide vs about \$20 billion). While I don't think any game has yet grossed nearly \$2 billion (the way *Titanic* did), I also don't think any game has yet cost \$200 million to make (the way *Titanic* did). In fact, the average game development budget is still under \$10 million.

Another difference is that the games industry still pays like any other immature, growth-oriented sector of the economy - that is, badly. Hollywood's economic abuse of talent has been the stuff of legend, but after about 100 years, everyone seems to have settled into an understanding. It's not all love and kisses,

Playing with money

Craig Zerouni reckons that it's only a matter of time before the games industry is exposed, as it's raking in the money, but still paying low wages.

but it basically works. And now the games companies are encountering some of the same battles fought long ago in film.

In particular, as games start to use more and more Hollywood acting talent, the games companies are resisting paying anything but union scale for the work. Actress Lynnanne Zager recently did four hours' work recording screams for *The Incredible Hulk Ultimate Destruction* game. She was paid \$900 - not bad, on an hourly basis. However, she also worked on *Shrek*, where she recorded more screams. Her pay for that was \$10,000.

This huge gap is why the Screen Actors Guild (SAG) has been trying to negotiate a new contract that would involve a kind of royalty payment - it wanted extra fees for games that sold more than 400,000 copies. The games companies, of course, want no part of this. The head of the negotiating committee was recently quoted as saying: "That would set a precedent for hundreds of other people who created a game to say, 'What about us?'"

Well yes, what about them? What about the developers, animators and designers who also make these games so good? Remember, these are the same companies currently being sued for allegedly breaking California, about laws relating to overtime pay, or more precisely, the lack of it.

The last I heard, SAG turned down a deal that would have bumped up fees for a basic session from \$556 to \$695 now, and \$759 by 2008, because they still want to get royalties. Right now, it looks like SAG is in a weak position - it's not as if anyone cares about who does the screaming on their computer games. But it will be amazing if the games industry can hold back this tide for long. A share of the wealth must be on the horizon. The question is, when?

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Maya 7

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Stealth benefits

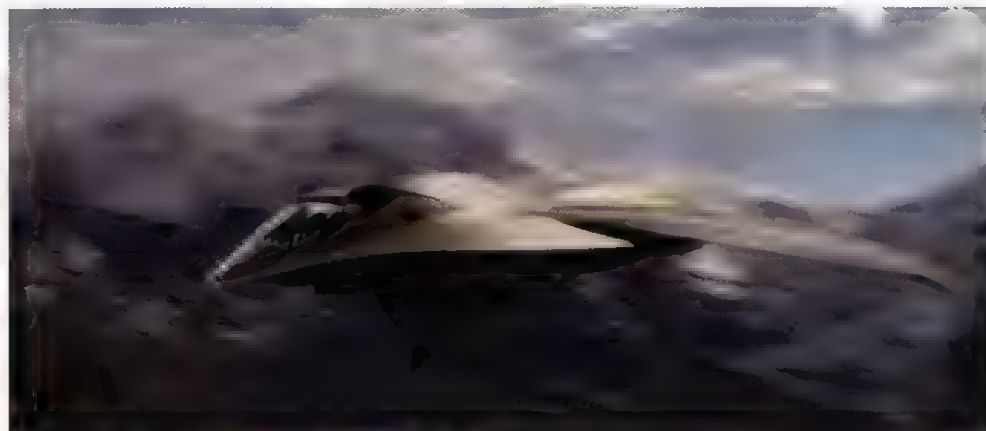
FILM A \$130million movie with effects courtesy of a freeware landscape generator? Well, almost. For *Stealth*, Digital Domain turned to EnGen, its in-house rewrite of Terragen. 3D World investigates

High-concept action movies don't come any more unashamedly crowd-pleasing than *Stealth*. The latest movie from *The Fast And The Furious* director Rob Cohen, it follows three hotshot pilots as they attempt to deal with a Stealth-bomber-turned-killing-machine after a lightning strike.

Digital Domain was the studio charged with elevating the airborne action to another level, ultimately contributing more than 800 effects (a new record for the company) that clock in at over 45 minutes of screen time. Along with digital planes, clouds, explosions and other volumetric effects, some 300 shots feature CG landscapes, generated with the help of an in-house tool based on *Terragen* – a low cost landscape modelling and rendering system widely used by budding 3D artists (and free for non-commercial use).

Many scenes in the movie are all digital, while others seamlessly blend real and CG-modelled landscapes. Several live plates were also eventually replaced, enabling Cohen to push action sequences even further.

"We've even got a 'power of ten' shot, going right from satellite level down to a man standing on a parapet," says Brad Herman, the Terrain Lead on *Stealth*. "The unique thing



● "We modelled everything from desert landscapes to lush green environments," says Brad Herman, Terrain Lead on *Stealth*. "The film has actually enabled us to build a huge library of environments that will be immensely useful for future productions we work on."

is that it doesn't rely on the usual 'power of ten' gags. The camera doesn't even pass through any cloud volumes. It's just one continuous 600-frame sequence."

"WE HAD CLOSE TO 200 PEOPLE WORKING ON THE MOVIE, WITH UP TO SEVEN HANDLING TERRAIN WORK FOR MORE THAN 300 SHOTS"

BRAD HERMAN, TERRAIN LEAD ON STEALTH

Preproduction work began for Digital Domain some two and a half years ago, before the movie had even been

green-lit. At the time, Matt Fairclough, the British author of *Terragen*, was working over at the studio.

"We'd already been using *Terragen* on commercials and wanted to go further with it, so it made sense to hire Matt himself to build on the entirely new codebase he had been

spent just shy of two years extending it and turning it into a very impressive production tool we now call *EnGen*. This is used in combination with *STORM*, our volumetric renderer, to create the digital environments."

As well as developing *EnGen*, much of the production period was spent building vast expanses of terrain. Seven distinct areas were modelled, each measuring 70x70km. "The starting point was Digital Elevation Model data provided by USGS [United States Geological Survey]," says Herman. "It comes from NASA's Shuttle Radar Topography Mission, which mapped 3D landscape data for the whole globe during a two-week orbit."

These accurately modelled landscapes were extensively modified. "A director like Rob Cohen wants specific action, so the artists spent a lot of time working on the landscapes," notes Herman. "Working with him was a smooth process. He lives just down the street here in Venice Beach, so he was in the office three days a week, giving us feedback and input."

developing for *Terragen 2*," explains Herman. "That was then used on *The Time Machine* and *Star Trek: Nemesis*."

With Fairclough departing early in *Stealth*'s production schedule, his fellow Digital Domain coders, Magnus Wrenninge and Mårten Larsson, picked up the reins. "They've

AT A GLANCE | The Stealth landscape

The hidden anatomy of Digital Domain's grand CG canyon

Pictured opposite is a layer-by-layer glimpse at digital terrain for the canyon sequence in *Stealth*. "The artists can work interactively with the *EnGen* terrain as it continually subdivides, and have the ability to pull elements out, make changes and place them back into the larger set-up," says Brad Herman.

While the bulk of the landscape work was built procedurally via *EnGen*'s node system, extra textures were also painted in. "Digital artist Max Gable

worked to add dust and debris mattes, footprints and other crucial elements that were then projected into *EnGen* for rendering a single landscape texture," says Herman.

Digital trees were created using a custom shader in *Houdini*. "We exported the terrain with points to define their positions for populating with *Houdini*, then used [RenderMan feature] Deep Shadow to place the tree shadows back on the ground in *EnGen*."





● *Stealth's* terrain is generated in *EnGen*, based on the next-gen version of the free app *Terragen*. "It offers a similar visual quality, but is tuned for larger shots at higher resolutions" says Herman

The *EnGen* program operates using system node networks. "We have scenes with over 1,200 nodes," says Herman. "They might simply add two numbers together, sculpt an area of the terrain, or define where a road goes."

Herman spent eight months developing a user interface that operates in a similar way to *Houdini* and Digital Domain's own *NUKE* compositor. "It isn't your average command line system that requires a PhD to operate. In fact, we took artists and turned them into shader writers in the space of about a month, without them even realizing it!"

EnGen natively renders in the high dynamic range EXR format, enabling Digital Domain to calibrate the sun intensity more accurately, and also output HDR frames to assist with the lighting and reflections on the digital aircraft. Although the program can deal with global illumination, it wasn't considered necessary for this show. "It worked just fine with the sun, atmospheric scatter and a couple of fill lights," says Herman. "The *EnGen* landscape is a lighting

BRIEF HISTORY | From Terragen to EnGen

How a freeware landscape generator evolved into a world-beating visual effects tool

First developed in 1998, Planetside Software's *Terragen* is a massively popular terrain building and rendering tool. Free for non-commercial use, it has been used on several film, broadcast and video game projects. One studio using it was Digital Domain, which recruited author Matt Fairclough in early 2000. From that point, the code base effectively split. Fairclough is now back working on *Terragen 2*, while Digital Domain continues to develop its own version, *EnGen*.

"Matt is working for a different user base with *Terragen 2*," explains DD's Brad Herman. "His interface is designed so that any 'normal' person can pick the program up and be generating really cool visuals about 15 minutes later. Ours is really a professional-level tool. It requires a month to ramp up for, but is then extremely powerful."

According to Herman, there are few shots in *Stealth* that could have been created using the original software. "The original *Terragen* is a

great tool, but it's limited to a single height field and can only handle smaller regions. It also contains just a few shaders and can't handle overhangs, though Matt has been developing this and other great features for *Terragen 2*."

Terragen can be downloaded from the Planetside website, listed below. A public beta of what will become *Terragen 2* is expected to be available before the end of the year.
www.planetside.co.uk/terrigen

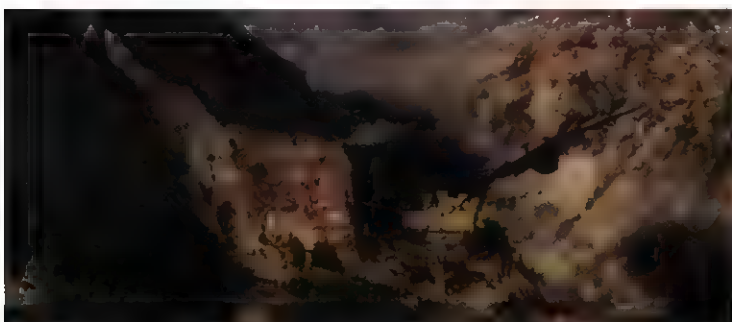
"IT'S MIND-BLOWING JUST HOW MUCH DATA WE WERE PUSHING AROUND ON THE SHOW. TERRAINS WERE WELL OVER 200GB, BEFORE TEXTURES!"

BRAD HERMAN, TERRAIN LEAD ON *STEALTH*

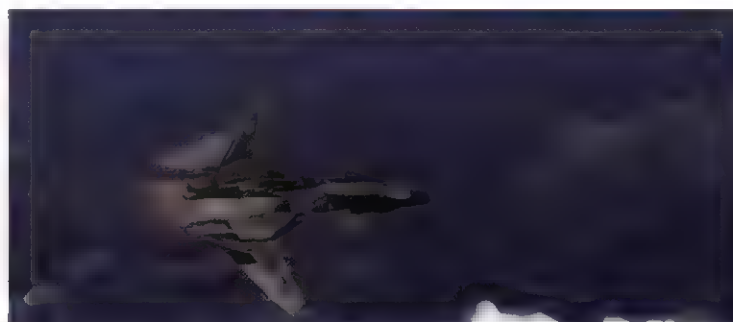
model into itself." Herman also stresses that procedural systems alone never deliver something completely photoreal. "It's the work done placing textures, trees, bushes, streams, erosion, and so on, that sell it. You've got to rough things up a little, and you need objects to convey the scale and sense of grandeur."

Following its success on *Stealth*, Digital Domain is now employing *EnGen* on ad jobs, eyeing up its value for further movie projects, and rolling it out more universally within the studio. "Eventually," says Herman, "it will just be another standard tool available to all of our artists."

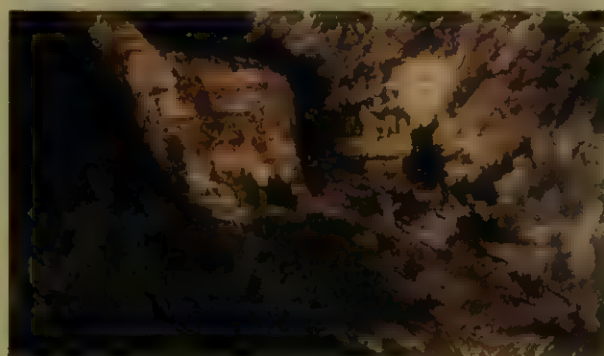
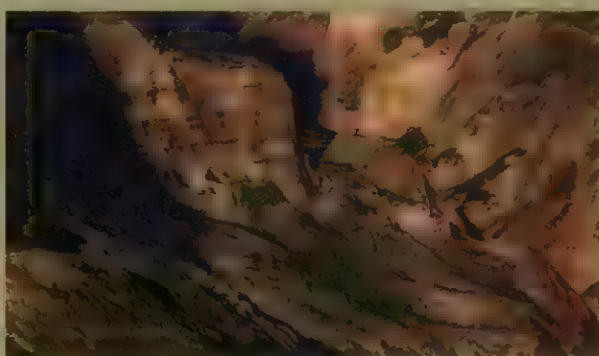
www.sonypictures.com/movies/stealth



● "The *EnGen* landscape is one continuous surface with everything displaced out of the sphere, each scene tessellating down to approximately 11 million triangles," says Brad Herman



● Herman: "One thing we learned on *Stealth* was that if you give directors the ability to shoot anything, they will! Rob Cohen has vision and the ability to communicate what he wants to artists"



The world's best 3D course?

COURSES A new visual effects course from Escape Studios aims to increase home-grown talent

London's Escape Studios is gearing up to offer a revolutionary new course for CG artists that's aimed at providing the most intensive production training available, with close involvement from the UK's top posthouses. The best news of all is that it's completely free!

Funded entirely by the Skillset Film Skills Fund, places on the VFX | Production Grade course are sure to be snapped up. Not only do students gain five months of full-time training at Escape Studios working on production projects, they also get a two-month creative work placement at Cinesite, Double Negative, Framestore CFC, Glassworks, The Mill or the Moving Picture Company (MPC). Each of these prestigious posthouses has contributed directly to a syllabus that covers the entire VFX pipeline. What's more, total financial cover is available for the students, including a minimum wage for the duration of the course.

Apart from the funding, the course differs in many ways from regular training in visual effects, not least in terms of where the focus is placed. "Unlike many courses, there's no emphasis on character animation or storytelling," says Dominic Davenport, MD of Escape. "This course was created to address the current skills gaps that the posthouses find hard to fill with home-grown talent. The



● This was created in Maya by Escape Studios graduate Steve Karski, following his 12-week intensive Maya Comprehensive course. Steve was working as a graphic designer, but decided to focus his skills on 3D

necessity to deliver quality work on time will be emphasised, and students will truly understand what the pressures and demands of working in this industry amount to."

www.escapestudios.co.uk

PLUGGED IN

GOOGLE VIDEO

Google's next step in a move towards world eyeball domination is the launch of Google Video. This free service enables you to search for televised content to help you get inspired or to share your work with the world at large. One early adopter is artist and animator Meats Meier (the 'Maya Master'), who uploaded his 2003 demo reel, featuring 3D sculptures inserted into live-action DV footage.

<http://video.google.com>



JOIN THE VFX ARMY

TRAINING Online training company aims to build workforce



PIXEL CORPS, THE branch id of ILM veteran and dvGarage founder, Alex Lindsay, has just

announced an open enrolment policy. For a nominal monthly fee, members will be provided with unrestricted access to software and extensive online training on a variety of products used by the visual effects industry. As well as offering online training videos, it's a tempting opportunity to become part of a global visual effects workforce. Corps students are expected to take on new challenges each week to simulate real-world production experience across the entire CG pipeline.

"We're not a replacement for schools and other training

programs," says Alex Lindsay. "In fact, we're in the process of partnering with various art schools to include their students in Pixel Corps. The big difference is that we're attempting to train, organise and network an army of artisans to capitalise on the huge shake-up in the media markets that's coming over the next five to ten years.



For companies, it's being able to find teams of hardened and disciplined workers instantly; for individuals, it's about having a network of peers to share their work with.

"As we build a new, pipeline-savvy workforce, we're betting that they'll be able to compete in an increasingly competitive market."

www.pixelcorps.com

Gnomon cuts its prices

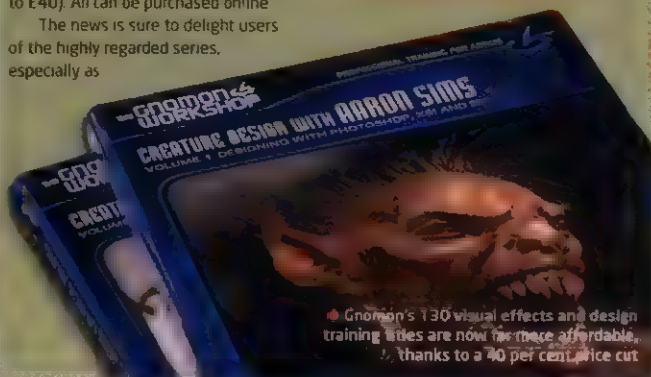
TRAINING 130 training DVDs take a price tumble

The Gnomon Workshop has announced a price drop of up to 40 per cent on its library of 130 training DVDs for design and visual effects, covering topics that include character design, storytelling, modelling, effects, character animation, compositing and matte painting.

The Analog (design) series of DVDs are now priced at \$39, \$49 and \$59 (from £23 to £34), while Gnomon's Digital (visual effects/games) DVDs are priced at \$49, \$59 and \$69 (from £28 to £40). All can be purchased online.

The news is sure to delight users of the highly regarded series, especially as

revised upgrade pricing is also available for qualifying owners of Gnomon's video tutorials. The price cut still sees the Gnomon DVDs remain slightly higher in price than many comparative training materials from the likes of Digital Tutors and KURV studios. However, the range on offer is excellent, with content provided by key professionals in the CG world, with titles such as Polygon Modelling 101 and Deformers 3: Wire, Jiggle. www.thegnomonworkshop.com



● Gnomon's 130 visual effects and design training titles are now more affordable, thanks to a 40 per cent price cut

EVOLUTION MARCHES ON...



"More power, more speed,
more grace." That was our
goal. Here is the result.

New light sources and settings
(e.g. Ambient Occlusion and Area
Lights) make even more realistic
images possible – at speeds of
up to four times faster than with
CINEMA 4D R9.1. So that you can
take full advantage of this new
level in image quality, CINEMA 4D
can now output images in
glorious 32 bits per channel colour
depth. And there's an additional
multi-pass link to the high-end
compositing tool Shake.

CINEMA 4D is now even easier to
use and more efficient. The new
full screen mode offers you more
workspace, and the new Content
Browser gives you a complete
overview of all your 3D files.

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Advanced Render module is
SKY. With just a few clicks of the
mouse, SKY lets you create and
animate realistic high-end
atmospheric environments,
including customizable 3D clouds.

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exciting details and to see
what else is new in
CINEMA 4D R9.5.

WWW.MAXON.NET



MAXON

Projects round-up

Sit back and take in some baseball, zombies and, yes, a flying bear

01 ALL-STAR GAME AD

We begin our round-up in sunny California with design outfit Blind, which was given the task of promoting Detroit's All-Star Game for Fox Sports by putting baseball stars inside a giant pinball machine. Creative Director Chris Do says: "We created the pinball machine as a CG environment and composited players into it. A CG environment provided flexibility and the best visuals." Most of the time was spent on tracking the live action elements to the 3D environment, and on detailing the pinball machine. "The lighting was complex. Getting it right was the key."

www.blind.com

02 FRUBES COMMERCIAL

Aardman Animations isn't a name you associate with characters being decapitated and wandering around without heads, but it did the job rather well to advertise Frubes (tubes of fromage frais). Director Steve Harding-Hill explains: "We combined traditional stop-motion animation that was shot on bluescreen with artworked, collaged backgrounds produced in Photoshop, and CGI character animation generated in Maya. These elements were composited together in After Effects, but not before we threw in live action footage of a boy beheading the product."

www.aardman.com

03 ANCIENT DISCOVERIES

Antonis Kotzias, a freelance 3D artist based in Athens, has just finished work on *Ancient Discoveries* - a documentary series for The History Channel. "I travel to a project on demand," he explains, "and was asked by the UK's Wild Dream Films to produce shots of an ancient ship sailing across the Mediterranean. I did it in 20 days mainly using LightWave. RenderMan was used to bake an occlusion map, and Maya to create foam dynamics. The water was created using displacement maps shaded in LightWave. Subsurface scattering was used on the sails."

www.gore3d.com

04 LAND OF THE DEAD

More decapitation, this time in effects shots by Toronto post facility Spin Productions for the forthcoming zombie flick, *Land of the Dead*. "We used Flame, Inferno, Combustion and Autodesk's Burn," says Visual Effects Supervisor Jeff Campbell. "This was [director] George Romero's first use of digital effects. By the end, he was cancelling stuntmen, as it was easier to do it digitally! The toughest part was the zombie priest: his head dangles by cords. We changed from animatronics to digital, reshot with a hooded character on greenscreen, and added a 3D head."

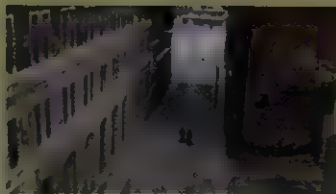
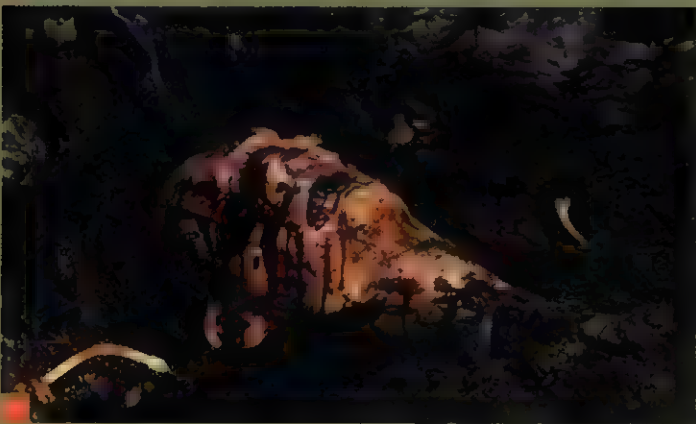
www.spinpro.com

05 SONY ERICSSON K750i COMMERCIAL

You're sitting around by a lake playing with your new cameraphone. What can you take pictures of? What about that dragonfly landing on the flower, that fish jumping out of the water, that nine-foot tall bear, or the eagle swooping down and snatching the bear? "The eagle and bear were shot in-camera - the fish and dragonfly are CG," says The Mill's Flame artist, Ant Walshaw. "The main challenge was where the eagle flies off with the bear. Textures from a shot of a rearing bear were mapped on to a 3D model with hunched shoulders to give the impression that it was hanging on to something."

www.the-mill.com



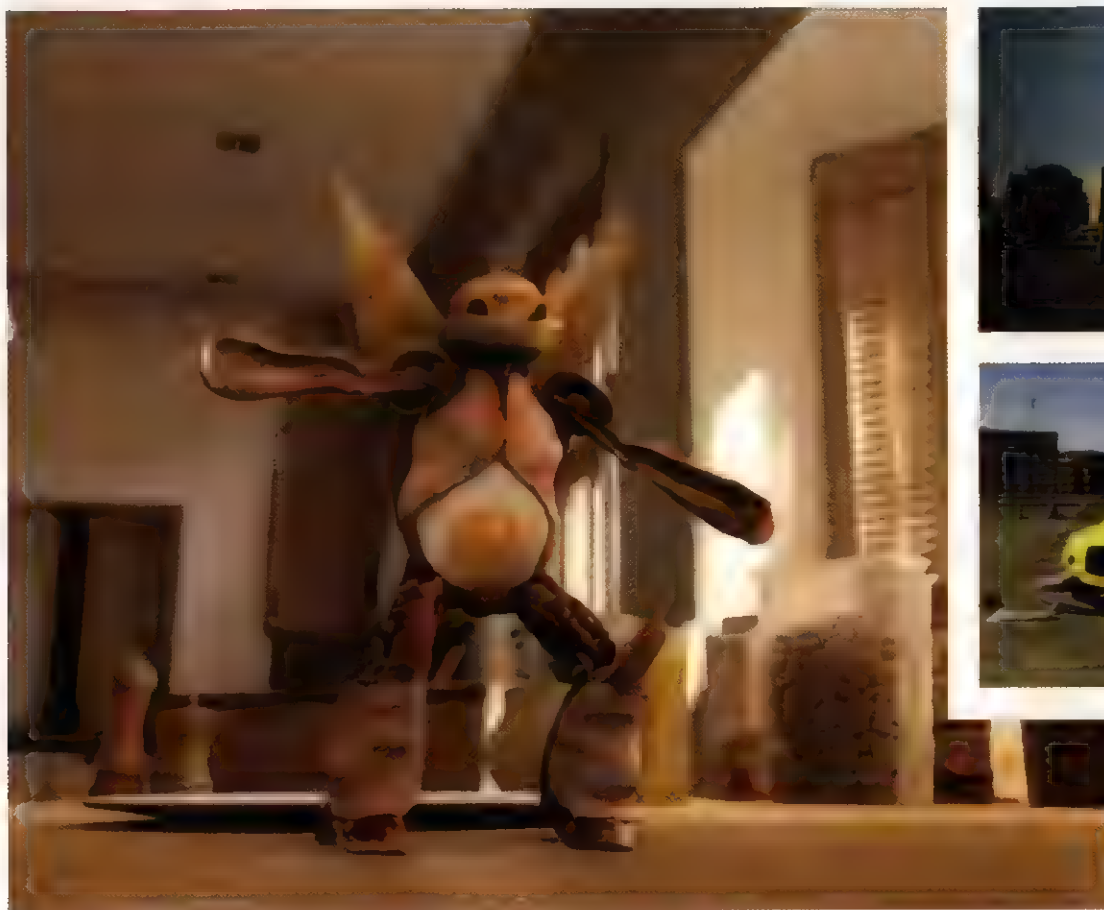


Images © 2005 Universal Studios.
Images courtesy of SPIN



Robots in disguise

VIRAL ADVERTISING Is The Embassy VFX's transforming Citroën now the most parodied ad in the world?



● The original Citroën ad (top) has been much parodied, with the C4 being replaced by the classic 2CV (above) by X-BAM, and a dancing full English breakfast (left) for Danish Bacon, by Meme and Ark VFX

Canadian outfit The Embassy VFX should be feeling very flattered indeed, if you believe the saying 'imitation is the sincerest form of flattery'. In 2004, it produced a TV ad in which a Citroën C4 morphs into a robot that boogies its metal socks off. The ad campaign has been hugely popular, and the 3D community at large has spawned a host of parodies and spoofs.

The most recent one is 'Bump and Rind', an ad for Danish Bacon by Meme, with special effects by Ark VFX. This is a hilarious take on the original, in which a full English breakfast leaps up from a plate to wiggle and shake its bottom (made of two tomatoes). "Apart from being every sci-fi fan's wet dream, the Citroën ad demonstrated a

level of animation that was bound to get the attention of the 3D community," says Meme's Art Director, Richard Peretti. "A real-life car that transforms into a huge dancing robot... even my mum thinks it's cool! Being a big *Transformers* fan as a kid, I loved the Citroën ad. It's a great visual piece, hugely popular and so perfect to spoof."

Illustration agency X-BAM (otherwise known as Alex Mallinson) showed its talents off nicely when it parodied the Citroën ad, replacing the C4 with a dear old 2CV. The viral had more than a million hits in two months.

"The appeal of the original Citroën ad is not the concept, but the execution. It was so perfect and dazzling that you couldn't help but marvel at its quality and enthusiasm," says Mallinson. "Parodying it was an obvious gag - it was so slick and cheerful, and just begged to be lampooned."

The Embassy VFX attributes its success to a creative eye. In an interview earlier this year, its president, Winston Helgason, told *3D World*: "A lot of it comes down to the fact that we have people with a really good eye for what looks right. You know an ad's going to be good when it's fun to watch at the animatic stage."

View the three ads online at: www.theembassyvfx.com, www.x-bam.com and www.memedigital.com

"THE APPEAL OF THE ORIGINAL IS NOT THE CONCEPT, BUT THE EXECUTION"

ALEX MALLINSON, X-BAM ILLUSTRATION AGENCY

PLUGGED IN

ETERNAL GAZE

Sam Chen's wonderful CG animation, *Eternal Gaze*, telling the story of tormented artist Alberto Giacometti, is available now on DVD. The Siggraph Best Animated Short award-winning film was lovingly crafted to include the 'agitated' surface of Giacometti's sculptures. The disc includes commentaries and a 'making of'.

www.animationtrip.com





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October 2005

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For anyone from beginners
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Eight subject categories

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Manga and Anime mania!



VW 'Summer's Morning' ad

Th1ng and Colony Media made Beetle Cabriolets the building blocks of life for the latest VW ad, using vivid CG animation to show the sunny side of summer driving

The majority of commercials and promos tend to be rushed through in little over a month, which makes the new ad for Volkswagen's Beetle Cabriolet a genuine oddity. This spot actually began life more than a year ago, with an initial incarnation delivered in December 2004. Its creators were then commissioned to spend another couple of months creating an enhanced edition for use in cinemas - effectively rebuilding the entire animation from scratch at higher resolution and twice the duration.

The starting point for *Summer's Morning* had been an award-winning print campaign, which featured a multitude of flat, brightly coloured car graphics. The agency then approached veteran director Mario Cavalli, founder of Colony Media, to produce an animated spin-off. At the outset, Cavalli wanted to remain faithful to the 2D source material, but a 3D solution was eventually chosen. This would make the task of moving the camera through the landscape, composed entirely of VW Beetle cars, more easily achievable.

Having already discussed the idea of collaborating with Dominic Buttermore's design company, Th1ng, Cavalli realised that this project offered a perfect starting point: "Colony didn't have a 3D facility, so it meant we'd be able to use their production infrastructure." He spent the first couple of months working on various treatments, after which fellow veteran Ravi Swami - an animator, director and tutor on Bournemouth University's Computer Animation Course - came onboard and began creating an animatic. *LightWave 8.2*, Swami's preferred 3D app, was chosen for the animation and rendering. Although the look of the ad is very graphic, no toon shader was used.

"In the original version, we'd been able to use flat models for the flowers at the horizon, but for the cinema version to hold up, everything needed to be 3D," says Swami. "It also needed extra detail, with many more flowers and trees, and everything swaying in the wind. The problem was, we were running out of memory, even with just 20 flowers in a scene. We had to break the one continuous shot down into a series of smaller segments that would fit together seamlessly, and also break the scene down into further render passes."

Darkside Animation, part of London company, Molinare, was brought in to help. "They saved the day with the help of *HD Instance*," says Swami. "It manages to get around the problem of objects using up memory when they're loaded into a scene by referencing a single object and placing it on a point, or a voxel. It effectively only loads a single object into memory as an instance - kind of like cloning, but without adding any geometry to the scene."

THE GREAT OUTDOORS

Rendering was achieved using the RLA format, to provide Z-depth information for compositing. "We used it to place the trees, which were rendered separately, behind specific clumps of flowers in the scene," explains Swami. "And it also proved useful for adding depth of field and the shadow that sweeps over the scene. Doing those elements in post reduced our rendering times and gave us a lot more control."

While all the complex geometry was built and placed by hand, some coding and dynamics work was used to animate the scene. "I got a programmer to write an expression to trigger actions, such as the hoods of the Cabriolets opening as shadow swept over the shot," says Swami. "We then tried a couple of different approaches for animating the river, eventually settling on a system where particles are effectively poured down a funnel-shaped channel. We also used particle systems for the butterflies and bees."

While the first version of the Beetle Cabriolet ad was never broadcast, Volkswagen is now giving the second an extensive airing in cinemas, following a debut on Kylie Minogue's sadly curtailed tour. Swami and Cavalli both admit that they now view the first edition as little more than a test, but there's no doubting the impact of the enriched version. "I've made a lot of commercials in my time - hundreds in fact," says Cavalli. "But I don't remember ever receiving such positive feedback."

Summer's Morning is currently showing at cinemas throughout the UK. The ad has also been posted in QuickTime format at www.shots.net

DETAILS

TITLE

Summer's Morning

AGENCY

D. B. Under

PRODUCTION

COMPANY

Th1ng

DIRECTOR

Mario Cavalli

RUNNING TIME

60 seconds

FIRST BROADCAST

13 March 2005

WEBSITE

www.th1ng.com

www.colonymedia.co.uk

TEAM SIZE

5 (plus Darkside)

TIME TAKEN

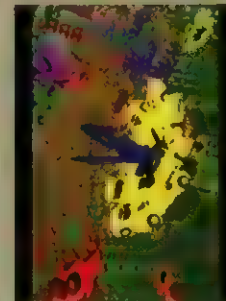
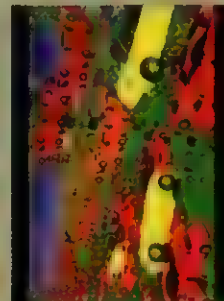
One year, three months of full production

SOFTWARE USED

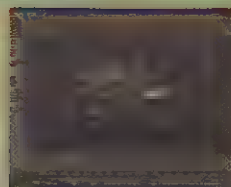
LightWave, HD Instance, After Effects

FREEZE FRAME

The sun rises over a country field, the silhouette of the new VW Beetle Cabriolet streaming through beams of light. As the sky becomes a kaleidoscope of colour, the camera pulls up to reveal day dawning on a boldly graphic landscape, with a field of red flowers reaching to the horizon. Petals, stems, trunks and leaves - all are composed from Beetle building blocks. Flower heads open, bees (yellow Beetles) dance and butterflies flap by. As the camera swoops through the scene, there's a river made of blue Beetles, whole fields of multicoloured flowers, and a rainbow made of cars. The camera settles on a flower, the VW logo appears, and the multicoloured landscape fades to black.

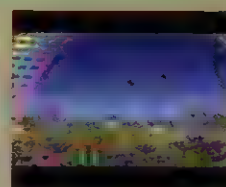


WIKIDS | How Th1ng and Colony Media produced a world made entirely of VWs



01 "The aim was to have butterflies flying along paths, but also introduce randomness," says Ravi Swami. "In the first version, the bees were similar, but I tweaked the particle behaviours and keyframing to give them more erratic movements."

02 "The scene has a single light source, with incident light shading used to create a simple, cheap alternative to cel-shading," Swami explains. "I created a shader for the windscreen - more effective than regular transparency."

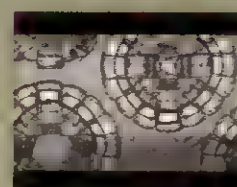


03 The original unreleased ad, which featured landscape elements. "Animating the ad wasn't complicated, but we soon found ourselves pushing the limit in terms of how many objects we could place into a scene with *LightWave*," says Swami.

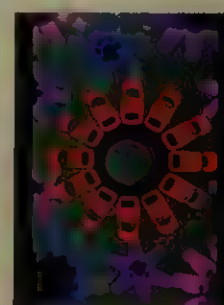
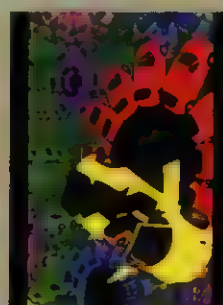
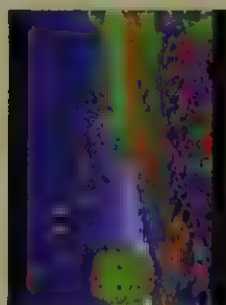
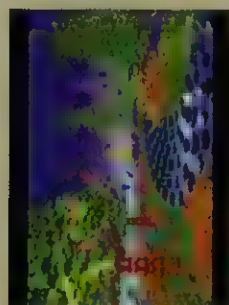


04 "We built one hero car, which is used 90 per cent of the time, and one with reduced detail for the background. We made use of subdivision surfaces, but the scene's complexity meant we had to keep an eye on the polygon count."

05 Depth of field and motion blur effects were added at the compositing stage. "It enabled Mario Cavalli to art-direct the effects, applying blur to specific bees and elements in the foreground, for example."



06 Director Mario Cavalli's original storyboard. "The starting point was a critically acclaimed print campaign that ran last year," explains Cavalli. "The agency came up with the idea of the animated ad, then worked to win Volkswagen round."



EVENT HORIZON



SMART GRAPHICS
22-24 AUG, MUNICH, GERMANY
For the fifth year in a row, researchers from fields as diverse as graphic design, cognitive psychology and artificial intelligence will meet to discuss advances in computer graphics. An academically focused event.
www.smartgraphics.org



LONDON INTERNATIONAL ANIMATION FESTIVAL
23-28 AUG, LONDON, UK
Building on the success of last year's festival, LIAF will showcase shorts from international filmmakers, plus student animation and new UK movies. Mystery guest revealed soon!
www.liaf.org.uk



GDCE 2005
30 AUG-1 SEPT, LONDON, UK
The Game Developers Conference tackles the creative, technical and business issues facing developers all over the world, offering lectures, tutorials and keynote speeches. Speaking opportunities are still available.
www.gdceurope.com



IBC2005
8-13 SEPT, AMSTERDAM
Embrace the world of broadcast content creation management by attending the annual conference. There'll be more than 1,000 companies showcasing their latest media technology and business ideas.
www.ibc.org

Comic-Con 2005

SHOW REPORT Thousands of fans queue for a sneak peak of forthcoming effects-laden movies, including *Superman Returns*, *King Kong* and *The Chronicles of Narnia*

This year's Comic-Con saw record attendance in the San Diego Convention Center's 6,500-seat Hall 4. Fans queued around the block in the hope of catching a glimpse of stars, directors, effects artists and exclusive footage from the most anticipated comic book and video game adaptations, horror, sci-fi and fantasy films set for imminent release.

Peter Jackson sent a video message from New Zealand, where he's midway through postproduction on *King Kong*. The audience was then blown away by a three-minute mix of animatics, bluescreen and unfinished effects sequences created by Weta, showing Kong's battle with a T-Rex family.

Director Bryan Singer flew in from the Sydney *Superman Returns* set. Shooting with state-of-the-art Genesis HD cameras, Singer emphasised that the film incorporates some of the biggest action scenes he's ever directed (in addition to the 1,500-2,000 effects shots, which include some CG reconstruction of Marlon Brando's head and face). A two-minute teaser trailer was met with a standing ovation.



● An early still from *King Kong*, shown off at Comic-Con 2005 to a rapturous reception, along with animatics and unfinished FX tests

Work-in-progress footage from *The Chronicles of Narnia: The Lion, the Witch and the Wardrobe* showed fantasy landscapes as well as CG beavers and a stunning (though unfinished) Aslan. Visual effects supervisor Dean Wright has his work cut out - he has 1,300 VFX shots to complete in time for the film's December release date.

Director Mark Steven Johnson and Marvel Studios chief Avi Arad presented *Ghost Rider*. During filming, star Nicolas Cage (or his stunt double) would wear either a green collar or hood to enable a CG head to be added in post. But as the film wrapped only a few weeks ago, the much-anticipated 'flaming head' effects shots weren't yet available.

Comic-Con also previewed footage from the live-action adaptation of *Doom*, with fans of the video game responding positively to the first-person shooter sequences evident in the clips. Monsters, gore and bloodshed have been guaranteed, while The Rock, one of the film's stars, described *Doom* as being "on a train ride straight to hell."

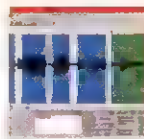
Lucasfilm announced that the *Star Wars: Clone Wars* animated series - to be created anime style - had begun preproduction, and the studio is currently recruiting over 300 animators to ensure delivery for autumn 2007.

Other films featured at Comic-Con included *V for Vendetta*, *Harry Potter and the Goblet of Fire*, *Aeon Flux*, *The Fountain*, *Pirates of the Caribbean 2: Dead Man's Chest*, *A Scanner Darkly*, *Chicken Little*, *Zathura*, *Sirther*, *Stealth*, *The Fog*, *Underworld: Evolution* and *Sky High*.

Kevin Smith, a firm favourite with Comic-Con audiences, delivered as always, while Tenacious D (Jack Black and Kyle Gass) brought the house down with a 40-minute set.
www.comic-con.org

Production line

The month's other releases in brief



LIPSYNC MASTER

This new standalone application generates animation curves for the likes of *Maya*, *Softimage XSI*, *LightWave*, *3ds Max* and *Cinema 4D*. Developed by Dundee-based Letterbox Animation Studios, it's now available for commercial release for Windows.
www.letterboxanimationstudios.com



NATFX 3 FOR 3DS MAX

The upgraded hybrid modelling-based plant simulation tool, *natfx*, offers advanced and easy wind animation and tree pruning, and has new customisation and deformation features plus a new interface. Price is £752 / \$1,307 / €1,090.
www.natfx.com



DOSCH 3D: GARDEN DESIGN 2

Version 2 updates *Garden Designer's* 3D Object Library for gardens and ornamental landscapes. You'll find 250 models of shrubs, bushes, hedges, fences and walkways, as well as many other decorative design elements. It costs £68 / \$119 / €99.
www.doschdesign.com



VICON IQ 2

iQ 2 motion-capture pipeline software features an intuitive interface with all of the tools needed to manage a full production. A complete

real-time environment for set-up, calibration and capture with the ultra high-res VICON MX systems. Pricing is based on application.
www.vicon.com



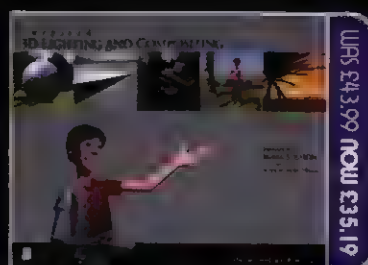
**Inspired 3D Advanced
Rigging and Deformations**

Clark Hood ISBN: 1-59200-115-5



**Inspired
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Cantero Valencia ISBN: 1-59200-117-9



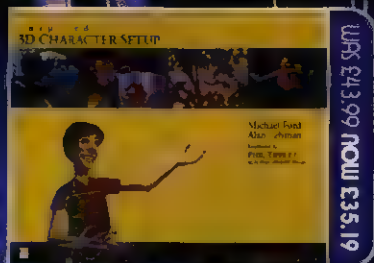
**Inspired 3D
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Parrish ISBN: 1-931841-48-7



**Inspired 3D
Modeling & Texture Mapping**

Capizzi ISBN: 1-931841-50-0



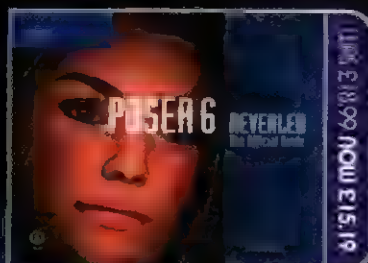
Inspired 3D Character Setup

Lehman ISBN: 1-931841-51-9



Maya 6 Revealed

Murdoch ISBN: 1-59200-522-3



Poser 6 Revealed

Murdoch ISBN: 1-59200-522-3



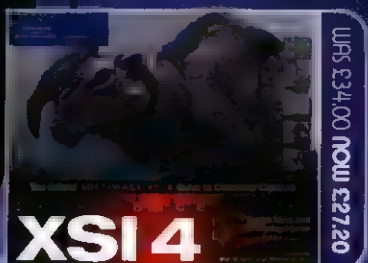
Lightwave 3D 8 Revealed

Murdoch ISBN: 1-59200-582-9



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and Games**

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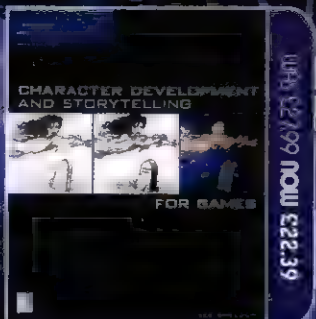
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AUTODESK HSI 4G**

Arnold ISBN: 1-59200-467-3



**Adobe Photoshop
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Arnold ISBN: 1-59200-467-3



**Character Development
and Storytelling for Games**

Sheldon ISBN: 1-59200-353-1



The Animator's Reference Book

Randazzo ISBN: 1-59200-467-3

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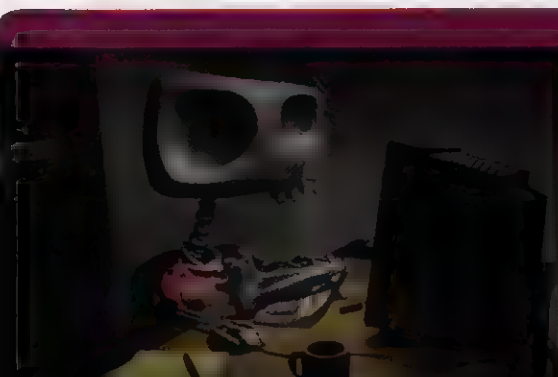
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MeNTaL RoY

If you're proud of your 24-7 working habits, your steely ambition, your bloodshot eyes, your RSI and your neglected partner, **Mental Roy** has something to say to you: that animation/film/commercial/3D project just isn't worth it. Get a life.



YOU DON'T HAVE time to read this - you've got work to do. Get Maria to summarise it and send it over in an email that you can read while the client's on the phone wondering if you could make the fire 'more Hollywood'. Or maybe you can squeeze it in on your 11 pm shift, when the kids are in bed, the wife's shackled up with the gas meter reader, and your mouse hand is ineluctably turning into a claw.

Yeah! Work, work, work! Only wimps and losers opt out of that all-nighter where, eventually, your eyes as well as your monitor get burned-in with the two seconds of footage you've been working on for a month (which will be dropped in favour of a shot of Tom Cruise looking moody yet caring yet tough yet sexy, because the sodding focus groups from planet bloody Mars thought he was a bit of a, like, pussy, man).

Folks: working more doesn't make you a better person. It doesn't mean you have a bigger penis. You don't have to 'keep up' with everyone else. Just do your best and don't worry, as a wise man once said.

Consider those anodyne Lemsip ads where the office grunt is just too damn busy to have flu, so takes his voodoo lemon-water-and-paracetamol combo and is back in the office the next day, smug PowerPoint presentation in hand, much to the boss's apparent amazement. Bloody hell, is there anything more depressing?

This macho-work-ethic bullshit is everywhere, but it's especially embedded in the world of 3D, whether you like it or not. See, there's no room for slackers in this corporation/collective/postmodern posthouse, said. There are plenty of people out there all too willing to take your position,

and for five grand a year less. We take only the best, and we expect 150 per cent effort (even though it only goes up to a hundred). We'll monitor your subconscious as you sleep to ensure that it's working on ideas for the next day.

Except, of course, that there aren't thousands of people out there who can do your job. There probably aren't even hundreds. That snotty-nosed kid who's been hanging about on work placement may look like he's an ass-kicking texture wrangler, poised to snap up your desk as soon as you disappear with something trivial like a bout of meningitis. But, guess what? He's just a snotty-nosed kid.

And here's a tip. If you get interviewed - perhaps even for this magazine - don't assume you have to mention your 'insane' work hours. 'Yeah, sometimes I work 48 hours straight and I can't remember the last time I had a weekend, but hey, I love it.'

Try, perhaps, the following: 'I work reasonable hours at a job I really enjoy, I'm paid enough to buy the odd iPod here and there, I do whatever the hell I like at weekends and I get regular sex.' Which one, do you think, is most likely to make the reader mumble, 'Lucky twat... wish I had that gig'?

If you can't in all honesty claim the latter, then you have two choices. The first is to lie. The second is to do something about it. Because yes, you probably do genuinely enjoy making your living, and no, it's not exactly like working 16 hours a day at a Polish salt mine.

But c'mon - there's effort, there's extra effort, and there's pissing your life away on something only you and a dozen film forum freeze-frame dweebs will ever see. Smell the roses - don't spend Sunday afternoon rendering them. You're missing out on all that debauched sex, for a start.

MACHO-WORK-ETHIC BULLSHIT IS ESPECIALLY EMBEDDED IN THE WORLD OF 3D, WHETHER YOU LIKE IT OR NOT

PLUGGED IN

ERRATA

In issue 68, we credited Andrew Proctor as the runner interviewed for our careers feature, 'The Fantastic Five'. Mr Proctor is, of course, a well-known 3D artist at The Mill. It was actually Andrew Thompson (pictured) who discussed his role as a runner at the studio. In the same issue, we described *Swift 3D 4.5* as offering a '50% speed increase on some renders'. This should have read '50-fold'.
www.themill.com
www.swift3d.com



GLOBAL ILLUMINATION #05

Key stats and trends from the 3D industry in specific countries. This issue: Singapore

Western animation is hugely popular with audiences in Singapore, followed closely in second place by Japanese animation. A number of animation studios are engaged in the production of content for television as well as full-length feature films. The leading animation production companies in Singapore include Raintree Pictures, Silicon Illusions, Digipix, DreamForest Productions, Fat Sandwich Animation, Peach Blossom Media, Scraw Studio and Cubix International. A number of international production houses are also setting up production facilities and operations in Singapore such as Southern Star and Lucasfilm.

Several full-length 3D feature films are being produced by local animation studios, including the soon-to-be-

released *Zodiac, the Race Begins*. This movie, produced by Cubix with the support of Media Development Authority (MDA) of Singapore, is also expected to be released in Asian markets, including China.

There are more than 50 companies in the Singapore animation sector.

Singapore hosts more than 15 international cable and satellite broadcasters, using it as a broadcasting base.

There are more than 50 companies in the Singapore animation sector.

Four full-length feature films are currently in various stages of production.

All households in Singapore are cable-ready, and this is expected to play a key role in popularising animation here.





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COMPUTING



advent children

FACTFILE

PROJECT

Final Fantasy VII:
Advent Children

FORMAT

DVD, Blu-ray

PRODUCTION COMPANY

00 minutes

STUDIO

Square Enix

WEBSITE

www.square-enix.co.jp

SELECTED CREDITS

Final Fantasy: Tetsuya
Square: Tetsuya, Square
Soft, Dragon Quest:
Tetsuya, Final Fantasy VII:
Advent Children

PROJECT DURATION

Not disclosed (at least
two years)

TEAM SIZE

40 to 50 on movie

SOFTWARE USED

Maya, 3ds Max, mermaid,
ray, Shake, After Effects

Will the first movie in the *Final Fantasy* series developed exclusively by Square Enix rock the animation world to the same extent as the studio's previous breakthroughs in videogaming? The CG community (and a few million die-hard *Final Fantasy* fans) are about to find out

BY JASPER SHARP



Despite having experience with facial motion capture on previous projects, Square Enix decided against it for *Final Fantasy VII: Advent Children*, sticking with keyframe animation throughout



Despite having experience with facial motion capture on previous projects, Square Enix decided against it for *Final Fantasy VII: Advent Children*, sticking with keyframe animation throughout

Tokyo-based developer Square Enix has forged a legendary status in the gaming world with its celebrated *Final Fantasy* series, with each new entry pushing the limits of available technology to help make this one of the best-loved franchises on the market.

Although the individual titles are unconnected with one another in terms of story and setting, they share a common philosophy, immersing the player in all-encompassing worlds with their own detailed mythos and characters with intricate back stories, converging the interactivity of the gaming format with the intensity and realism of the motion picture.

One of the breakthrough entries was *Final Fantasy VII*, which caused a monumental stir in gaming circles when it was released on the PlayStation on 31 January 1997 in Japan. The first in the series to move away from a mythical *Dungeons & Dragons*-inspired setting to a futuristic, post-apocalyptic environment, it combined state-of-the-art graphics and a rousing score with richly sketched characters and an intricate

"It's not our goal to simply recreate everything in the real world with CG. While motion capture is used as a base, all our scenes are produced using keyframe animation" ADVENT CHILDREN CO. DIRECTOR TAKESHI NUKUNE

tapestry of individual plot strands. It revolutionised the RPG format for the games console market and went on to sell a record-breaking nine million units worldwide.

Eight years on, as *Final Fantasy XII* readies itself for a PlayStation 2 release, Square Enix is about to release *Final Fantasy VII: Advent Children*, the much-anticipated direct-to-DVD movie based on the same milieu and characters. It's one of the works in a series of *Final Fantasy VII* releases, which includes the mobile phone game, *Before Crisis*, the forthcoming *Crisis Core* for the PlayStation Portable (PSP), and *Dirge of Cerberus* for the PS2. With Square Enix vociferously denying any association with the ill-fated *Final Fantasy: The Spirits Within*, the high-profile feature released in 2001 by Square's now defunct Honolulu office, *Advent Children* forms the company's first real foray into narrative feature animation.

● Although detailed, the movie retains a degree of stylisation. "Our ultimate goal is to create images that cannot be recreated in the real world," says co-director Takeshi Nozue.



● The movie remains faithful to the look of the original *Final Fantasy VII*. "While we've detailed the characters somewhat, we've tried not to stray too far from the original game," says Nozue.

Based in the city of Midgar, the original game centred around an epic quest by the renegade guerilla group 'Avalanche' to bring down the corrupt Shinra Electric Power Company. Shinra is poised to tap into the planet's latent natural energy resources, ostensibly bringing about a new utopian era for its citizens, but many believe sinister motivations underlie this goal. The new film begins two years after the events of the game, with Midgar in ruins and a mysterious illness spreading among its citizens.

With appetites whetted by the 25-minute preview at the Venice International Film Festival in September 2004, *Final Fantasy VII: Advent Children* looks set to become one of the company's most groundbreaking projects to date. *3D World* spoke to the movie's co-director, Takeshi Nozue, about the perils of motion capture and the photorealism vs stylisation debate.

"Simply making something look as real as possible isn't all there is to CG animation. Ultimately, a character's subtle expressions or actions are not decided by a computer, but the artist sitting behind it"

ADVENT CHILDREN CO-DIRECTOR TAKESHI NOZUE

Can you tell us about your background at Square Enix?

After entering Square Soft in 2000, I was assigned to the movie section of the *Final Fantasy IX* game. After that, I worked as a director on the movie parts of *Kingdom Hearts*, *Kingdom Hearts: Final Mix* and *Kingdom Hearts II*. I was the animation lead on *Unlimited Saga* and *Final Fantasy X*, and worked on lighting and compositing for *Final Fantasy X-2*.

After the impressive preview, what can we look forward to, in terms of story and characters, in *Advent Children*?

While we've increased the detail of the characters, we've tried not to stray from the original *Final Fantasy VII* game. As for character modelling ... we realised this was going to be one of our biggest challenges. It was difficult to incorporate new types of camera work and character action without losing the feel of the original game, but we feel we've found a good balance.

Why have you chosen a DVD-only release? Will the film be screened anywhere theatrically?

Firstly, we were impressed with the possibilities that the DVD media format offered and, secondly, even in its initial stages, *Advent Children* was never planned to be a feature-length

production. As for a theatrical release, we're hoping to arrange several opportunities for *Final Fantasy* fans, as well as those new to the series, to experience the movie on the big screen.

How is this different from previous *Final Fantasy* projects?

The biggest difference is that this is a movie rather than a game. For this new format, we've adjusted the way we use colours - the games are known for their brilliant colour schemes. However, in an attempt to visually enhance each character's expressions, we've altered that scheme, ultimately holding back on overall brightness and colouring. In addition, we've utilised a number of environmental and lighting effects.

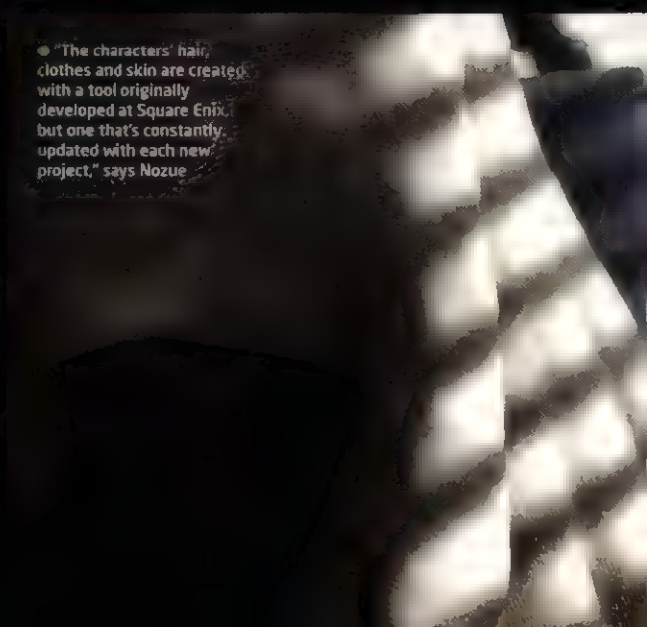
What kind of technical set up are you using for this work?

Most of the 3D parts are created using *Maya*, with *3ds Max* for some of the effects. Rendering is done within *mental ray* and *Maya's* render engines - *mental ray* was most suited to our programming environment, while *Maya's* renderers have been used by our staff on numerous projects in the past. Compositing is done with *Shake* (on Mac OS) and *After Effects* (on Windows).

Stills from the movie look beautiful. How are you creating the vegetation and organic elements in these shots?

The backgrounds are not made using a dedicated tool, but with normal modelling techniques, all by our background department.

● "The characters' hair, clothes and skin are created with a tool originally developed at Square Enix, but one that's constantly updated with each new project," says Nozue.



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● The film's distinctive bleached-out colouring was set during the 3D phase, while the grainy look was achieved during compositing.

"It was difficult to incorporate new types of camera work and character action without losing the feel of the original game, but we feel we've done an excellent job in creating an innovative balance."

ADVENT CHILDREN CO-DIRECTOR TAKESHI NOZUE

Recently, *The Polar Express* has proved that you can produce an all motion-captured movie and still make a profit at the box office. How has this affected your thinking? Is *Advent Children* all mo-cap, or is there much keyframe animation?

It's not our goal to simply recreate everything in the real world with CG, so we've decided to use motion capture only as a template. While the data is used as a base, all our scenes are produced using keyframe animation. Our ultimate goal is to create images that cannot be recreated in the real world, so in that respect, *The Polar Express* hasn't influenced us much.

What about facial motion capture?

We're not using it. While we have experience of it on previous projects, we decided against it for two reasons: firstly, it could only serve as a template; secondly, the data is too complicated. Around 80 parameters [animation targets] are used for facial work ... eye movements are all done with keyframe animation.



● While Square Enix hopes the film will attract new viewers, the plotline targets hardcore fans. "We've incorporated numerous ties to the original story, so that fans of the game can enjoy the movie," says Nozue.

With the characters' skin, how have more recent developments in technology, such as subsurface scattering, affected your set-up?

We really liked the SSS shader used on Gollum in the *Lord of the Rings* movies. Unfortunately, our schedule didn't allow us to use it, so we settled on a simpler form of rendering. However, we've experimented with various new techniques and are looking forward to using them when the budget allows.

How conscious are you of competing with developments in similar CG animated projects from the likes of Pixar and DreamWorks, or Japanese projects such as *Appleseed*?

We feel that companies such as Pixar and DreamWorks share the same drive as we do in creating groundbreaking new CG worlds and images. However, instead of focusing on competing directly with other CG-based animation companies, we're trying to commit ourselves to creating something that only we can. As for *Appleseed*, we're delighted to see that a Japanese project has received such praise from other parts of the globe.

The question of photorealism vs stylisation is an interesting one. The more photorealistic you make characters look, the more important it is to animate them naturalistically, or the incongruity can be jarring.

This is exactly what we're aiming for - something not too stylised, but not something too photorealistic. Effectively creating something of this nature is what has taken us the most time. We feel that 'reality' is not everything the viewer desires.

The visual style is closer to an in-game cutscene than a photographic image. Do you think there's a limit to what can be achieved when treating a cinematic reality as CG? When used as a tool of expression, we don't feel there are any limits to what CG can do. Of course, simply making something look as real as possible isn't all there is to CG animation. Ultimately, a character's subtle expressions or actions are not decided by a computer, but by the artist sitting behind it. I feel that too many people get caught up in the reality aspect of CG and miss out on some of the other exciting features this type of animation has to offer. ●

Final Fantasy VII: Advent Children is due to ship on 14 September 2005 in Japan, European and US dates tbc. www.square-enix.com

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Escape Studios graduate Steve Karski created this image in Maya™ after completing a 12-week intensive course. Escape is a primary source of talent, providing world-class training software and recruitment. If you want to find out more visit www.escapestudios.co.uk

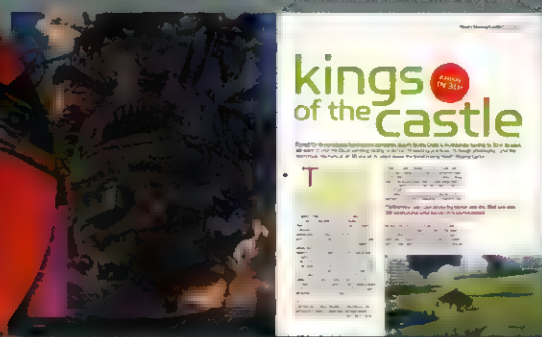
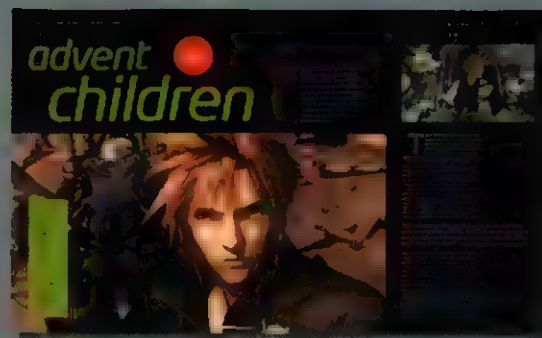


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● When CG met anime: a sorrowful basset hound may be a hallmark of the work of Mamoru Oshii, but so are digitally generated lens flares, camera wobbles and spasms of fuzzy focus. Oshii uses CG effects to add to the sense of reality in his films



the secret history of anime



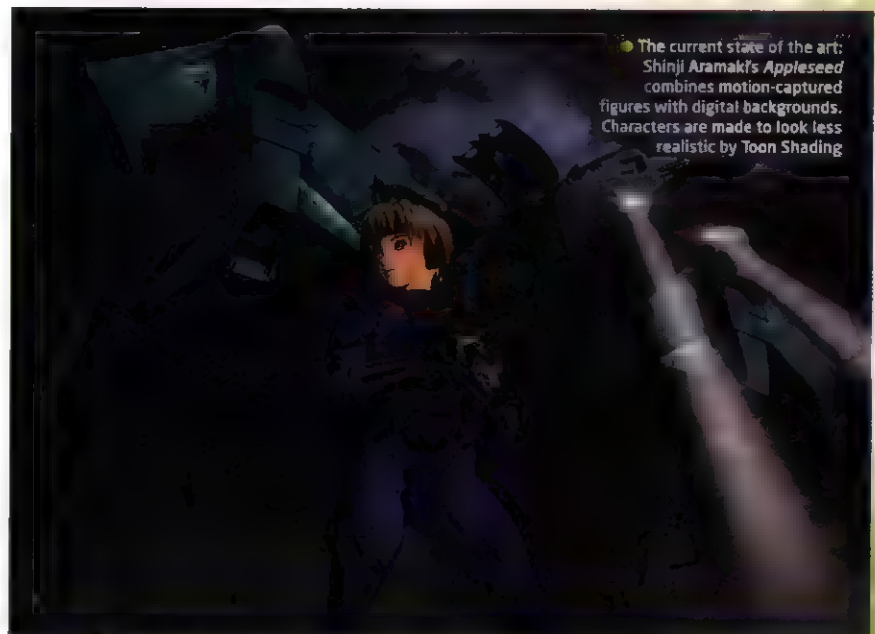
Although Japanese animation still prides itself on its traditional look, for the last twenty years it has made use of computer technology to drive the genre in new directions. In this article, some of the leading anime directors talk about the course of this sometimes not-so-subtle leap from cel to CG

BY JONATHAN CLEMENTS

Look at the anime films *Appleseed* and *Kaidohmaru* and behold motion-captured characters rendered as if they're 2D - the computing power of *Maya* and *LightWave* put to use imitating hand-drawn images. Despite the growing power of 3D, the Japanese animation industry still clings to its 2D skills partly for political reasons, partly because it prefers the best of both worlds.

It all began with *Tron*, a film that pretended to take place inside a computer, but actually used limited computer graphics slapped over a traditional adventure story. *Tron* attracted undue attention from Japanese animators, chiefly because director Steven Lisberger was familiar to them because of *Animalympics* (1980), and his jump to live-action director status with *Tron* made him a poster boy for hard-working animators in Japan.

One of these animators was Osamu Dezaki, an experienced animation director who subsequently shoved a computer-animated sequence into his new anime movie, *The Professional: Golgo 13* (1983). The short sequence is the first known use of computer graphics in Japanese animation, and it foreshadowed much of what was to come. CG was used for its own sake, not as a means of aiding the story, but just to show off. However, the



Normal cel animation is usually limited to five layers of action from foreground to background. Kenji Kamiyama's sequel to *Ghost in the Shell* applies digital animation to use far more.

"Working with computer graphics isn't like everyday work with animation cels... it's an image literally untouched by human hands"

MAMORU OSHII, DIRECTOR

use of computers in the early 1980s was limited. Realistic human movement was still years away, and it would be another decade before realistic faces were possible. This limited Dezaki to large, solid objects - in this case, a squadron of helicopter gunships. The wrench was palpable: *Golgo 13* jumped from traditional anime style to the flat-coloured shapes of CG and back out again.

REACTION AND RESISTANCE

Some visionaries suggested that computers, as they fell in price and increased in numbers, could eventually be put to better use in

the animation industry. But in an era where the most affordable personal computer was a ZX Spectrum or a BBC Micro, desktop animation seemed a long way off. In an industry where artistic labour was notoriously cheap and most companies were very small, a network of five Silicon Graphics workstations with applications would wipe out most annual budgets. Japanese film companies excelled at animation because it was cheap, and they were unlikely to have the kind of money required to change over; nor were they likely to realise the need to change. Politically, no animator without computer skills was going to admit that computers were necessary.

In a sense, computers went underground. One of the early proponents of CG was Katsuhiro Ôtomo, who put it to use behind the scenes in the seminal *Akira*. In a dream sequence where a hospitalised boy is hit by a collapsing wall of giant Lego bricks, Ôtomo used 3D animation to plot the way the bricks would fall. Each was rendered in skeleton graphics, and the resultant tumbling sequence was drawn over by animators to create a realistic tumbling sequence.

Ôtomo's rival director, Mamoru Oshii, used computers for similar underhand means in his landmark production, *Ghost in the Shell* (1995). Like Ôtomo, he was less interested in flashy gimmicks than in the recreation of reality. "Working with computer graphics isn't like everyday work with animation cels," he said. "It's an image that is literally untouched by human hands. If you're used to analogue rather than digital drawing, you have to relearn your entire working methods and world view. On this production, we were able to do a few things that simply have not been done before."

EARLY USE OF ANIME

Oshii took the smart route, using the period's limited CG - and soon after, 3D CG - where the jolt wouldn't interfere, on futuristic viewscreens and computer displays. The opening of *Ghost in the*

Focusing on the marriage of man and machine, Mamoru Oshii's *Ghost in the Shell* pioneered the craft of scanning animation cels into a computer rather than photographing them.

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Final Fantasy: The Spirits Within

3D anime in cinema? Perhaps both

The first *Final Fantasy* movie had all the hallmarks of the late 1990s in the Japanese animation industry. It was based on a gaming franchise and left in the hands of a director from the games world, with little experience of film. But although billed at the time as the most expensive 'anime' ever made, Hironobu Sakaguchi's film was actually a product of the American movie industry. The money and director may have been Japanese, but the bulk of *FF*'s staff were from the United States. At the time, Japanese animation producers were still claiming that 3D would alienate the audience; perhaps they were right. On paper, *FF* was a terrible flop, but also an undeniable sign of the amazing developments in the 20 years since *Tron* and *Golgo 13*. Moreover, digital animation is far more recyclable than its analogue equivalent. Was *FF* a disaster, or an accounting write-off to develop new code for the game? A new *FF* anime, *Advent Children*, is forthcoming on DVD, utilising *Maya* - just like the game itself. The budget is officially much smaller, but with so much development work already completed by the supposed failure, it can afford to be.

Movie / 2001 / Region 2 DVD distributed by
mysterypictures.com



Possibly the 'Japanese' animation best known to Western audiences, Hironobu Sakaguchi's *Final Fantasy* movie was actually nothing of the kind. Although a financial flop, the movie opened up new technical and artistic options

"Because normal animation only exists in two dimensions, your camerawork is usually very limited. You can't do basic cinematic things"

MAMORU OSHII, DIRECTOR: *GHOST IN THE SHELL*



By the 21st century, digitalisation had taken care of so many animation tasks that it was possible for one man, Makoto Shinkai, to make an entire anime solo

Shell features a cyborg under construction: she was partial, because she was still being made; she was featureless because she was incomplete. Cleverly, she only turned up in short bursts, because the production credits broke up each short animation sequence. Ten years on, with the sequel *Ghost in the Shell 2: Innocence* (2004), Oshii's protégé Kenji Kamiyama created an extended homage to Oshii's original, with a creation sequence that's completely 3D.

"Because normal animation only exists in two dimensions, your camerawork is usually very limited," says Oshii. "You can't do some of the most basic cinematic things, such as zoom in. But digital animation makes it a lot easier to create visual tricks that give the illusion of three-dimensional space, such as artificial focus pulling, or parallax, where objects in the foreground appear to move faster than those in the background"

Oshii was also one of the first filmmakers in Japan to utilise online editing. Instead of photographing hand-painted cels on a rostrum camera, as had been done in Japan for decades, he scanned them into a computer and then manipulated them. Not only did this allow for experimentation with sequences and the tweaking of colours before finalising, it also enabled him to integrate other effects.

Avid and other online editing devices combined computer graphics and animation with relative ease. They also permitted



■ A reminder of just how far we've come in 20 years: a still from *Golgo 13's* sole, alarmingly rudimentary 3D sequence, masterminded by Osamu Dezaki

camera trickery, such as artificially added lens flares or moments of fuzzy focus. This enabled the filmmaker to have a CG background with a cel character in front, or vice versa. Before long, industry-standard *Animo* software was running alongside *RETAS* (Revolutionary Engineering Total Animation System), a bitmap-based system from the Japanese company Celsys, incorporating *TraceMan* (the scanning application), *PaintMan*, *CoreRETAS* and *RenderDog*. On bigger productions, animators sometimes use Softimage's *Toonz*.

THE FREELANCE FACTOR

The introduction of CG elements opened up the anime industry to outsourced digital animation work. Freelance operators whose work had previously been restricted to corporate logos or small pieces of commercial work were hired to produce segments of animation as part of larger stories. For 3D animators in Japan, the tool of choice remained *LightWave*, with Adobe *Photoshop* and *After Effects* used for adding extra elements. Producers in Japan, however, continued to claim that a full 3D CG look would fail to be welcomed by Japanese audiences, possibly in an attempt to put a spin on their inability to afford it.

Mitsunori Kataama's *Links* was an ad company that jumped at the chance to add digital effects to *Macross Plus* (1994). Once again, the industry played to its strengths, with Kataama's group put to work on digital missile-targeting devices, scanner readouts and hyperspace effects. The plot centred on a pop star who only exists inside a computer, allowing the filmmakers to turn the shortcomings of digital animation to their advantage.

Computer animators were still regarded very much as 'special effects' themselves, and were alienated from other staff members. Often considerably younger than the more traditional animators, the computer generation also arrived with some new ideas in filmmaking. Yoshinori Sayama originally worked on *Macross Plus* for *Links*, scanning robot drawings into a Mac for later manipulation. Soon, he was working on a series of small, looped animations, designed to add 'colour' to the production.

"Whenever the action calmed down," said his then-boss Kataama, "the viewer's eyes start to wander and they notice more, so we made sure there was something for them to see."

Sayama's most notorious accomplishment was in a tiny sequence of brainwaves on a scanner, for which he hijacked genuine hospital equipment and scanned his own brain, before pasting the resultant peaks and troughs into the combination cel. To get the effect of "angry mountains and calm plains,"

KEY FRAMES | *Malice@Doll*

The most recent developments in CG haven't come at the big corporate level, but rather lower down the scale in small production houses.

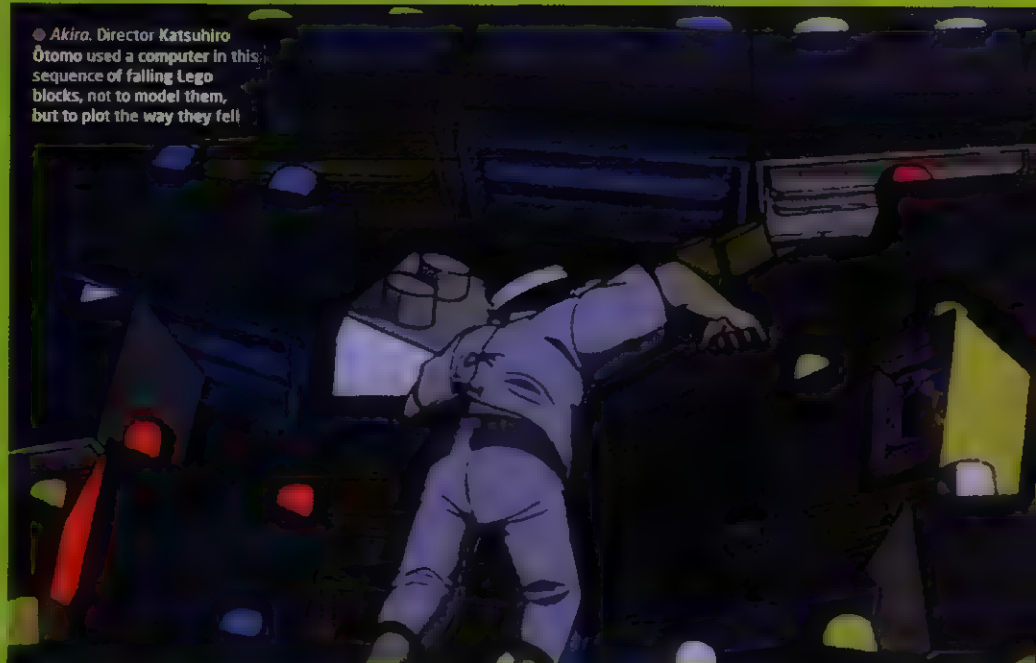
Keitarou Motonaga's *Malice@Doll* (2000) was largely eclipsed by the hype surrounding *Final Fantasy: The Spirits Within*, but it remains an important work in the history of 3D animation in Japan.

Realising that the low budget wouldn't allow them to compete with realistic animation, writer Chiaki Konaka concocted a plot that revolved around sentient dolls. This enabled the animators to avoid complex expressions, to cling to plastic tones, and to maintain a stiffness of movement that became a virtue, not a vice. Chiaki Konaka's script cunningly calls for a virtually expressionless cast, and the animators conceal the shortcomings of their work in copious shadows and montages. It also took a leaf from the rule book of Tsui Hark, the producer of *A Chinese Ghost Story* (1987), who specialised in super-fast cutting, editing every shot a millisecond too fast in order to hide the joins between special effects and the real world.

Video release / 2001 / Region 2 DVD
distributed by Artsmagic.co.uk



● Akira. Director Katsuhiro Ôtomo used a computer in this sequence of falling Lego blocks, not to model them, but to plot the way they fell



FEATURE | The secret history of anime



● Shoji Kawamori's *Macross Plus* focused on the replacement of humans by computers. Behind the scenes, its staff was invaded by new computer talents with unorthodox approaches to animation

Sayama attached the readers to himself and then shouted and raged until, eventually, he had all the data he needed. The scene occupies about five seconds of screen time and took only 20 minutes to arrange – still considerably quicker than drawing it all by hand.

"When I look at the screen," Sayama told *Newtype* magazine, "I can see my own alpha and beta waves in a starring role. I must be the first person to use real brainwaves in anime!"

Others disapproved of such a cavalier attitude, but in a way, Sayama had just demonstrated that motion capture (of a very

weird kind!) could save time and money. Proper 3D motion capture, using suits, was pioneered in the Japanese gaming world, and found to be vastly more cost-effective than the analogue animation equivalent, rotoscoping. Gaming popularity led to cartoons based on the games themselves, pouring experienced digital animators back into the industry, where they found that technology had advanced to the stage where animation cels weren't necessary at all.

STEAMING AHEAD

As computer power increased, so did the bargaining power and usefulness of those who could actually work with it. One victim of this constant change was *Akira* director, Katsuhiro Ôtomo, whose follow-up movie, *Steamboy* (2004), was constantly delayed by the arrival of new developments.

"We actually made the pilot in 1995," a rueful Ôtomo told *Newtype*, "but at the time, the only available medium was ink and paint. Now we can use digital colours to paint the entire thing inside a computer." Keen to put his falling Lego brick technique to greater use, Ôtomo began experimenting with integrating further moments of 2D and 3D animation. He particularly excelled at artificially created environments, through which his virtual camera was able to zoom, twist and pan.

Ôtomo's interviews in the late 1990s reveal an increasing sense of wonder with the potential of computers, as well as frustration with their ever increasing capabilities. *Steamboy* didn't hit cinemas until many years after its original release date. Each time Ôtomo's team completed a shot they were proud of, a new program or piece of hardware would arrive that could do it better.

By the late 1990s, the Japanese animation industry was losing much of its young talent to computer games. This created a vicious circle of atrophying talent, with traditional cel animation work farmed out to Korea and Taiwan. An entire generation grew up in Japan without the skills to work properly on cel animation. It became hard to find local colourists and in-betweeners (both jobs could be done easier by a computer), and the cost of employing foreign workers was increasing. The big change came in 1997 when a network of computers running Windows NT became cheaper and easier to man than a foreign animation studio. 1997 also saw the first TV series that looked traditional but was actually totally coloured in by computer. Before long, even the most normal-looking Japanese cartoons were at least partly made by computer. Cel animation became a thing of the past.

THE QUEST FOR REALISM

While Ôtomo continued to fiddle with *Steamboy* (which only sees its final UK release this year, a full decade after work on it began), others took the risk that their movies would date fast. In the late 1990s, fully digital

▶

● Ahead of the curve: production on Katsuhiro Ôtomo's *Steamboy* took ten years, largely because of constant advances in 'the state of the art' in CG



KEY FRAMES | Voices of a Distant Star

One lone animator demonstrated what was possible with off-the-shelf software, from the comfort of his living room



At first glance, it may seem substandard and derivative: a 25-minute love story about a schoolgirl robot pilot sending text messages to her would-be boyfriend back on Earth, yet *Voices of a Distant Star* is one of the true landmark works in modern anime. Gaming company employee Makoto Shinkai made it on his own in about seven months, using software lifted from his workplace. As the multimedia corporations fight over increasingly smaller shares of TV ratings, *Voices of a Distant Star* shows what one man can achieve in his living room. Of course, Shinkai had a little help from his distributors, who provided financial and logistic support, but *Voices* is essentially a homebrew anime, put together with a high-end home computer and a few bits of commercially available software. Shinkai's achievement showcases a broad range of techniques available to modern creators, including the use of textured photos for backdrops. Western-based independent animators, please take note.

DVD released February 2004. DVD distributed by ADV Films.co.uk

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● The 3D era: *A.Li.Ce* was one of the first anime to ditch the cel look entirely in favour of animation like that of computer games

dumping all semblance of the cel look for a 3D style that resembled computer games. A prime example was *A.Li.Ce* (1999) - the punctuation and spelling deliberately designed to ensure it gets filed next to *Akira* in Japanese-language store catalogues). Some of its staff were apprenticed on the environmental quest game *Shenmue*, where they had perfected the art of recycling code. The games industry was used to the idea of costs up front, spending a lot on developing a character that, once complete, could essentially move itself around.

Many of the *A.Li.Ce* staff had little expertise in old-fashioned

cel animation. When using 3D animation, they looked to other precedents, chiefly from the world of puppetry. They observed, for example, that when Gerry Anderson made *Supercar* (1960-62), he'd already worked out that puppets were more convincing if they weren't seen walking, so he tried to keep them in their vehicles as often as possible. Similarly, faceless minions or robot enemies were easier to produce and clone, both in the puppet world and in 3D animation.

The characters in *A.Li.Ce* spend a lot of time driving cars or flying through cyberspace, neither of which require contact with the ground of their 3D environments. They're usually filmed from the calves up, so that the sight of their feet hovering above the ground doesn't break the illusion of reality. They also fight robot enemies, and do so in an Arctic tundra environment, because snow and the occasional trees make for easier background generation.

Elsewhere, Mahiro Maeda directed *Blue Submarine No. 6* (1998), which mixed 2D and 3D images. In order to achieve a uniform effect, Maeda's team tried flat-rendering the 3D models to match the flatness of the cels, instead of painting them with detailed textures. At the time, Maeda left it to his staff to manage: "Every time I had to order the CGI staff, I described motions using sound effects. 2D and 3D animation have a different timing to their movements and that was the hardest thing to reconcile," he told *Manga Max* magazine.

Maeda's head of CG, Akira Suzuki, also hit upon an interesting means of covering the join between 2D and 3D, filtering the underwater sequences so that everything was covered with a blue sheen. Similar tactics were tried in *Blue Remains* (2000), an all-3D CG anime that was largely set underwater. Depth perception was kept at low levels thanks to the natural darkness of the sea, while the sea bed was as simple an environment to render as tundra. Meanwhile, the weightless environment of the water allowed characters to spend a lot of their time floating, with the addition of CG bubbles to remind viewers why.

Blue Remains also exploited the strengths of 3D CG with its bad guys. Instead of creating a figure with an unrealistic face, whose lips wouldn't match his words, they created a disembodied floating brain that communicated by telepathy - his every appearance a recurrence of a small loop of footage.

TRUE COLOURS

Integrating disparate elements remains a perennial problem with CG, not only in its 3D variant, but also in its application to

Last Exile

Last Exile was a TV anime for the Final Fantasy generation, its appearance a mix of wildly anachronistic designs, thrown together for the way they look rather than any relevance to the story. It also exploited the limitations of 3D animation, featuring wingless aircraft with a darting flight motion that was easier to render than the graceful swoops and parabolas required of realistic aeroplanes.

Last Exile's 'fan favourite' status was carefully managed from the earliest stages, with lavish full-page images in Japanese magazines designed to encourage interest in its style and design before it was even released. But while snatches of the show have

impressive 2D and 3D animation, it also uses 3D to save money. This is most apparent in the prolonged panoramic shots of vessels in flight, in which the camera essentially remains stationary while vehicles move slowly past. (Think of the opening shot of *Star Wars*, but lasting that little bit too long.)


This is the high-tech equivalent of the old anime staple, the 'static pan', in which a camera would move slowly across a single image, giving the illusion of movement when in fact it's the camera, not the image, that was in transit. Both are simply tricks to juggle a limited budget



● Form follows function - or, as in the case of the TV anime *Last Exile*, plot follows technical limitations imposed by 3D software. The story may have a convincing surface, but anime marketing worried that the *Blue*...



● Hisaya Takabayashi's *Blue Remains* chose an underwater setting in order to bathe the 3D elements with a blue sheen to hide imperfections



● Translucent ghosts in the streets in Hayao Miyazaki's *Spirited Away*, drawn by traditional anime artists, but processed digitally into the frame

CG. Katsuhiro Ôtomo's production of *Steamboy*, still soldiering on during this period, was dogged by its perfectionist director's discovery of just how many colours he could use.

"Until now," he told *Newtype*, "there was always a limit to the available colour palette. Now we can use 16 million. That's enough to be functionally infinite, so the old standards for colour have been completely destroyed. And, of course, once something has been painted, it can be changed. If it's not exactly what you envisaged, you can pick away until you get it right."

That, at least, was how Ôtomo saw it in 1998, but technology kept moving. By 2001, people like former Links manager Mitsunori Kataama laughed at such small numbers. The problem, unforeseen by Ôtomo while working in a studio, would only become apparent when the digital footage was transferred onto film and screened in a full-size theatre.

"There aren't enough colours," says Kataama. "It sounds like a lot, but it's actually very little. Celluloid film is extremely sensitive. When an image lights up on film, it doesn't turn white immediately, but changes gradually. There aren't enough gradations when you try to express light, so the colours jump."

On Ôtomo's monitor screens, it may have looked impressive, and eight-bit colours were certainly good enough for most TV anime. However, in movie theatres, Ôtomo, Kataama and animators like them were forced to take the next step up: 16,770,000² (24-bits).

ART BEFORE SCIENCE

Rich colours were also used in Hayao Miyazaki's Oscar-winning *Spirited Away* (2001), for which the prime application was *Softimage XSI*. For a story set in a bathhouse in a flooded fantasy world, it found plenty of applications in water animation and the morphing of otherworldly spirits. It was also put to use, *Akira*-style, in plotting the path taken by a fallen dish, and in combining small black lumps with blinking eyes, and leg

"We actually made the pilot of *Steamboy* in 1995, but the only available medium was ink and paint. Today, we can paint the entire thing inside a computer."

KATSUHIRO ÔTOMO, DIRECTOR

animation to create little soot creatures. However, it remained a policy at Miyazaki's Studio Ghibli that new technologies shouldn't influence the style of art. Consequently, *Spirited Away* began production the old-fashioned way with pencil and paper. *Softimage XSI* effects were added only when they could enhance the film. Deciding what effects to use and when to use them required production meetings between the digital animators and traditional staff - 3D experts were finally part of the main team.

For Mitsunori Kataama, now a digital animation supervisor, the allure of technology even tempted Miyazaki, the infamous traditionalist. Anime, particularly Miyazaki's work, customarily has fantastic backgrounds - it's considered worthwhile to go that extra mile for an image that will appear more than once, leading to gorgeous skies and backdrops. Miyazaki began by stating that there would be no digital interference in the backgrounds at all, until consultation with his computer animators revealed what options were really available.

"Once we began," reveals Kataama, "he requested changes like 'add a little purple here' or 'dim the shadow there'. Mr Miyazaki then claimed it was unavoidable." Digital animation was here to stay. ●

Jonathan Clements is the co author of *The Anime Encyclopedia*, and translator of over 70 anime and manga productions. He was editor of *Manga Max* from 1998-2000 and contributing editor to *Newtype USA* from 2002-04.

● Our journey's end: although she looks like a traditional character, *Spirited Away*'s Chihiro is drawn by hand and animated by computer, in the modern style.



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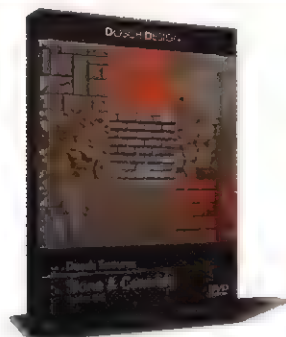
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BY ADAM BURTTON

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TIME TAKEN
30-90 min. res.

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- Supporting *Poser* scene files and original content (OBJ format)
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ALSO REQUIRED
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Poser attracts a broad range of artists, from amateur hobbyists to film studio professionals. Some use it as their only image-making application, which, with the advances in *Poser* 6's lighting and rendering engine (now capable of using HDRI, IBL and Ambient Occlusion) is definitely becoming a more viable option for higher quality output. However, others tend to use it as a kind of advanced plug-in for applications that are better suited to the creation of more complex scenes.

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all rigged and ready for work. There's also a vast online community of third-party content creators filling almost every niche and genre conceivable.

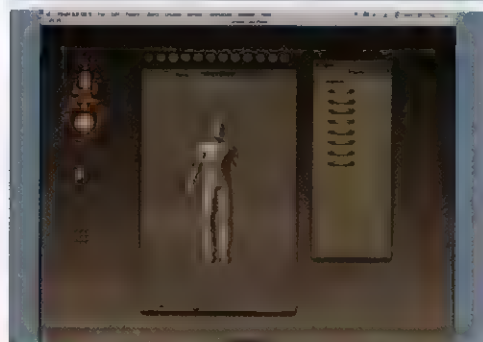
In this tutorial, we take you through a practical, real-world example of creating the lead character for the illustration on the facing page. You'll choose a suitable figure type, apply MAT (texture) files, use facial morphs to alter her character, apply and conform clothing and hair, and import and parent third-party props. You'll also find tips on posing the model and preparing her for export to another application for final texturing and rendering.

Developer e frontiers has provided an exclusive demo of *Poser* 6 on this issue's CD, and DAZ Productions has donated a generous bundle of *Poser* content from its store, worth more than \$100; install this first. Restrictions on the demo mean that to get the full benefit of the tutorial, you'll need the commercial version of *Poser* 6, but it should enable you to explore the basic techniques.

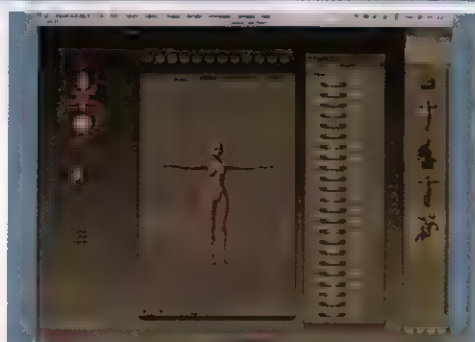
Adam Burton is a freelance CG artist and illustrator. His projects include advertising and animation for advertising, publishing and corporate clients, including Saatchi & Saatchi. www.brambleat.com



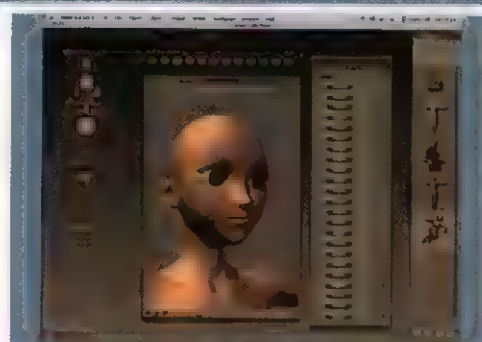
STAGE ONE | Figure set-up



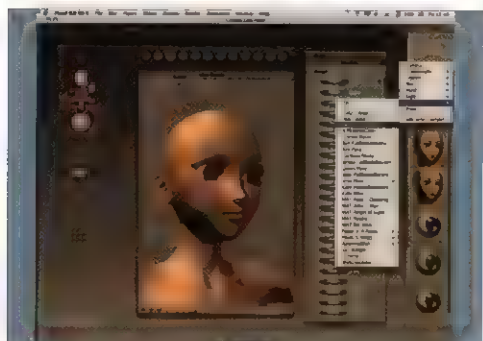
01 Launch Poser 6 and you'll be presented with a default scene file containing one of the new Poser 6 characters, called 'James'. We don't need him for this tutorial, so click anywhere on his body and press [Delete] on your keyboard. A dialog box will ask you whether you're sure. Click 'OK'.



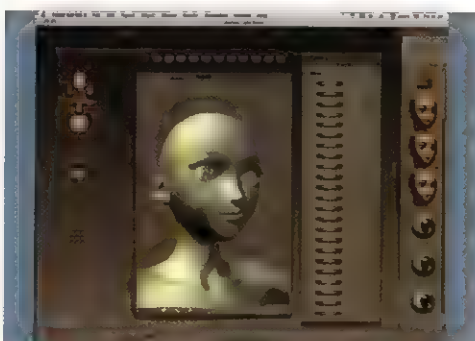
02 To the right of the Poser screen layout is the Library palette. This may be docked or closed by default, so click on its handle to reveal the Library categories. For this anime-style character, we'll use the 'Aiko' figure, so click on 'Figures' and look for the folder named 'Aiko 3', and double-click on it.



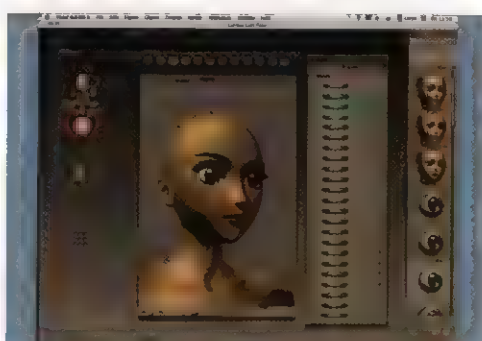
03 Double-click on the thumbnail in the Library and the default Aiko figure will be loaded into the preview window. To the left of the screen layout are the camera controls. Click on the 'face cam' (top-middle). Then, using the camera rotation and move controls (top of preview window), move a little closer and rotate slightly into a three quarter perspective.



04 We want to customise Aiko's face to make her more unique and aesthetically pleasing, and obviously fulfil the requirements for an anime/manga-style character. Before we morph, let's apply a texture that's heading in the right direction as regards style. In the Library palette, click on the small 'down' arrow below the 'Poses' title. In the drop-down menu that opens, select: Pose > MAT Aiko 3 Maps.

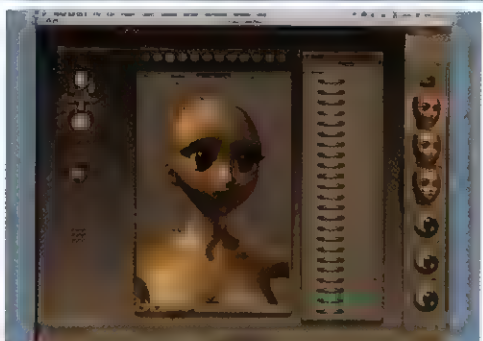


05 Select the 'All Aiko Map 01 lo' texture. Her face now appears to be blank white, so you need to activate the 'Texture Shaded' mode to see the newly applied textures. In the lower-left of your screen are the 'Document Display Style' controls. Select the last one on the right: 'Texture Shaded'.

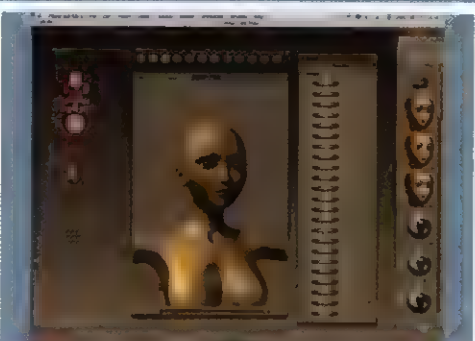


06 Aiko looks a little more anime already! Feel free to choose your own eye colour, and add some makeup if it helps. We've coloured her eyes brown and added the red tinted eye makeup. None of these are permanent changes anyway, as we'll customise the textures in the final scene later. They should help a little while we shape her face.

STAGE TWO | Morphology



07 Make sure Aiko's head is selected (you'll see the 'Head' title in the Parameters palette). If it isn't, click somewhere on her face. All of her facial morphs are listed in this palette, and dials have a default 'off' setting of '0.000' usually. A setting of '1.000' is fully activated, but they can be set to higher '+/' settings with sometimes undesirable results!



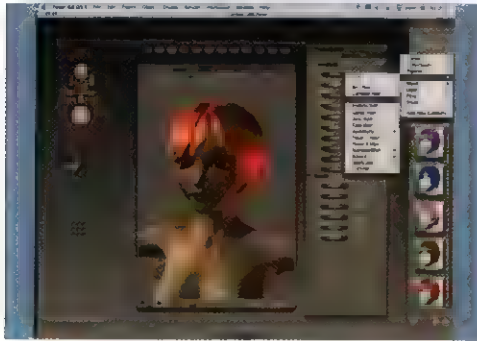
08 It's sensible to try them all at the fully 'on' state to get a feel for how they each affect the mesh in turn. In this instance, we've tweaked a number of the morphs to get something closer to what we want (see the full-size screenshots on the CD for exact settings). We don't want her features to be so exaggerated that they don't suit the style of the final image.

Customisation

Morphs are your friend! One of the true strengths of Poser is its ability to customise your figures quickly and easily using hundreds of pre-made morph targets. These cover basic facial expressions, racial characteristics and shapes, and full body shapes and exaggerated features. There's little excuse for your character to look like someone else's - a common criticism of Poser art - if you spend some time playing with morphs and customising to your heart's content. And, of course, you could also create your own (based on the original mesh) to import.



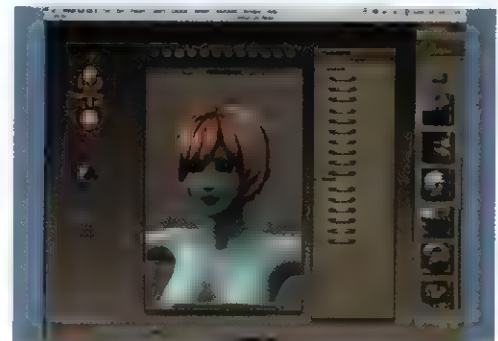
STAGE TWO (Continued) | Morphology



09 Go to the Library drop-down arrow and select Hair > DAZ Hair. Double-click on 'NyokoHair-B'. Go back to the drop-down and select Pose > MAT Aiko 3 Hair and choose a colour. We'll return to tweak the hair shape and any movement settings later when we establish her pose and action.

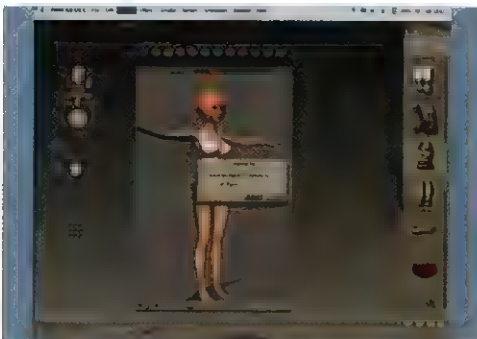


10 Since Poser 6 offers more advanced lighting options, we'll try them out in a quick render. Go to Library > Light > IBL Ambient Occlusion and double-click one of the light probe thumbnails. From the menu bar, choose 'Render > Render Settings'. Move the arrow to the right by one step, so that shadows are activated.

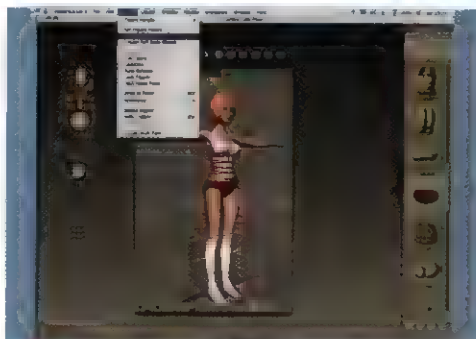


11 Click on the 'Render Now (Firefly)' button and sit back while the render appears. These are not high-quality settings, of course, but it gives us a better idea of how Aiko may start to look in a finished render. You may decide to go back and tweak her morphs further at this stage, otherwise it's time to move on to clothing.

STAGE THREE | Clothing and prop import



12 Switch back to the 'Main Camera' and, from the Library, select Figures > Aiko 3 Clothing. Scroll down to find 'AL Bodice'. Click on the double tick button at the bottom of the palette. The clothing is applied yet not fixed, so with movement, the bodice will remain static! From the menu, select Figure > Conform To ... and select 'Figure 1' (Aiko) in the dialog before clicking 'OK'.



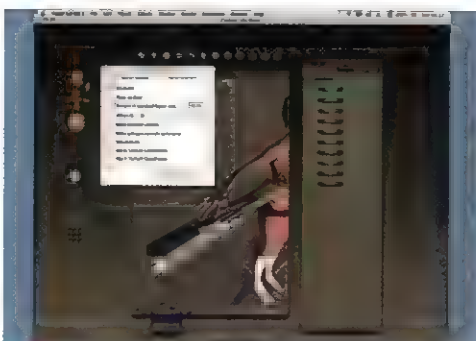
13 Repeat this process for the 'ALBoots' and 'ALPanty' items, and anything else if you like the look of it. Be sure to 'conform' them all to Figure 1 as you go. We're not too concerned with the textures at the moment, as they'll be replaced in the final image anyway.

Make some extra money

The Poser community is vast, and there are thousands of third-party items available, from clothes, hair models, weapons and vehicles to figure morphs, textures and props of every kind. Most are reasonably priced and available online. The quality and diversity has definitely increased over the last couple of years, but sometimes, in the hours you can spend looking for 'the right outfit', you could have probably modelled your own! If you have the time and skill, what you only used once could earn you extra cash on one of the Poser broker sites.



14 We've provided a model of a gun, which we need to import and position in Aiko's hand now, since it will be more complicated outside of the T-pose. (Note: The Poser 6 demo may not permit imports, but if you installed all the files from the CD, you can also find it in the Props library > 'Tutorial Aiko Gun' folder. We'll demonstrate the Import procedure anyway.)



15 Go to the 'File' menu, select Import > Wavefront Object and navigate to find the 'KK_05.obj' file on the CD. In the dialog that opens, set the scale of the object to 40 per cent of figure size. Using the Tran and Rotate dials on the Parameters palette, move the gun into the position shown here. (See the full-size screenshot on the CD for the exact coordinates.)

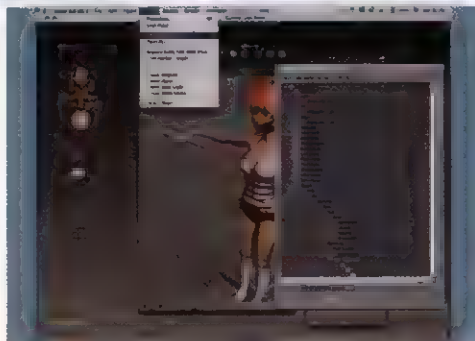


16 By default, the display is using the 'Fast' preview mode. This reverts all objects to simple boxes when moved, which makes fine adjustments tricky to see. To rectify this, select the icon at the bottom-left of the preview window (see previous screen) and select 'Full'. Now we can get in close and start to pose the hand more easily. In 'Camera Controls', switch to the 'Right Hand Cam'.

STAGE FOUR | Posing the character



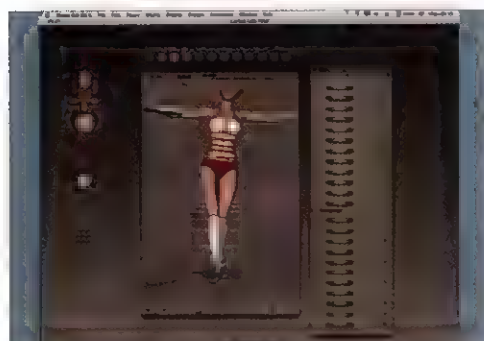
17 Using the various dials for the right hand and fingers, make fine adjustments to close them around the grip. Ensure you rotate the viewpoint regularly to keep updated of how it looks from all angles. We would avoid the 'Grasp' and 'Spread' hand morphs, as they can do more harm than good. It's better to pose each digit in turn, making adjustments to all of them as you move around.



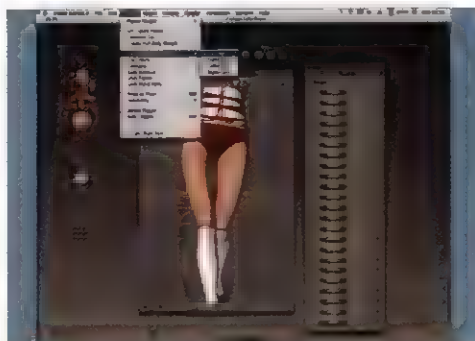
18 Now we need to make the gun a 'child' of the hand. Go to the 'Object' menu and select 'Change Parent'. In the hierarchy list that opens, find the 'right hand', click on it and then choose 'OK'. We'll save the hand pose, too. Select the hand, find the 'Hands' folder in the Library, click the '+' symbol at the bottom, name and save the pose.

Saving time

It's not always necessary to create a complicated pose from scratch, and when time is tight, it's worth having a look through the installed Library poses, or the various volumes of third party poses available online. See if any can be used as a good starting block. The poses don't have to be for the character you're using, as much of the information will carry over between figure types. Where it doesn't, the software will warn you, or there will be some minor distortions or collisions to adjust. If it gets you part way there on a difficult pose, it's a time saver.



19 For a pose to look natural, you need to consider how each element of the form is affected, and for this, you can't beat having a live model to provide temporary reference. If this is impractical, you'll need a full length mirror! Observe how balance is adjusted as you shift positions, and try to apply this to your virtual character. Start by moving Aiko's hip down seven degrees to her left.



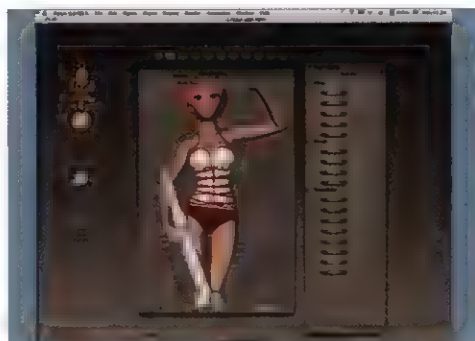
20 As you move the hip down, the Inverse Kinematics (IK) push down on her left leg naturally. However, the IK will prevent you from moving the leg joints independently, so we need to disable it. Go to Figure Menu > Use Inverse Kinematics and uncheck both right and left legs. Bend 'Left Buttock' 8°, Twist -4°, Bend 'Left Thigh' -2°, Twist 2°, 'Left Shin' Bend 26°, Side 4°, Twist -1°.



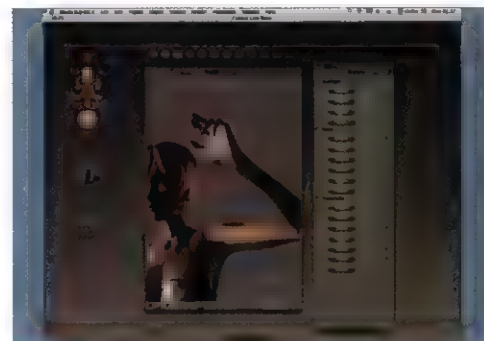
21 As with the hand posing earlier, make sure you rotate around the viewport to check progress, and pull a light around using the 'Light Controls' to help with visibility. To make Aiko's 'Left Foot' make contact with the floor correctly: Twist -8°, Side 7°, Bend 37°, and 'Left Toe' Bend -29°. On to the right: 'Right Buttock' Bend 10°, Side -3°. 'Right Thigh' Twist -9°, Side 15°, Bend -13°.



22 Carry on with the 'Right Shin': Twist 6°, Bend 1°. Now on to Aiko's upper body: we want her left arm raised to make a gesture back to her troops, and the right lowered to hold the gun, so we need to emphasise this in the chest and shoulders. First, bring her 'Abdomen' back into line: Side 8° and then Bend 'Chest' 7°, Side 5°, to give her the swagger of a John Wayne-style leader!



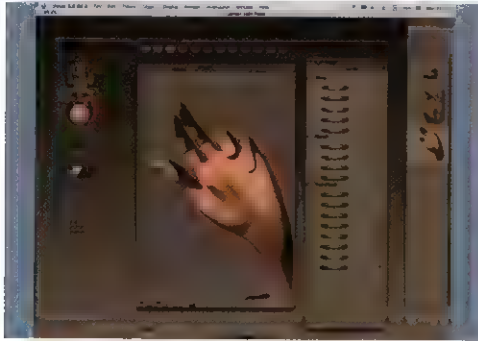
23 Next, the left arm: 'Left Collar' Front-Back 4°, Up-Down 10°. 'Left Shoulder' Twist -16°, Front-Back -20°, Bend -2°. 'Left Forearm' Twist 8°, Side 35°, Bend -92°. This elevates her left arm - now to lower her right: 'Right Collar' Twist -3°, Front-Back -5°, Up-Down 9°. 'Right Shoulder' Twist 25°, Front-Back -6°, Bend 38°. 'Right Forearm' Side 21°, Bend 29°. 'Right Hand' Side 9°, Bend 11°. Phew!



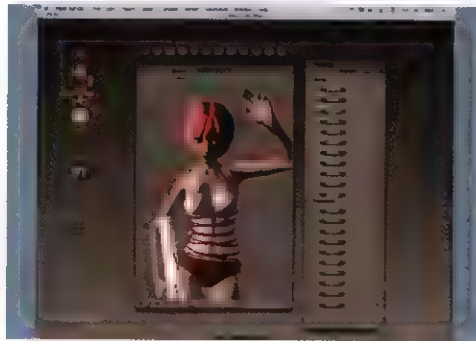
24 Let's sort out the posing of her left hand. This character is a true leader; she's a cool character and means business, so we want to suggest that she's signalling to her army to move in or to prepare to attack. After some more reference gathering (looking in the mirror), we decide on this hand shape. Notice that we've positioned the lights to help create a mood.



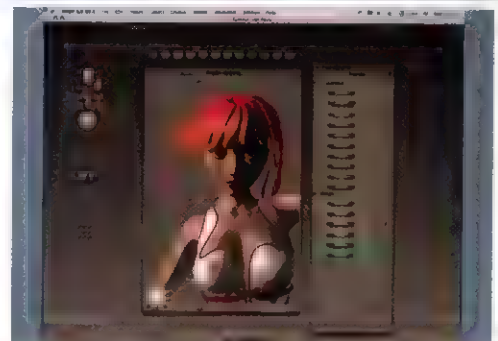
STAGE FIVE | Final tweaks and exporting



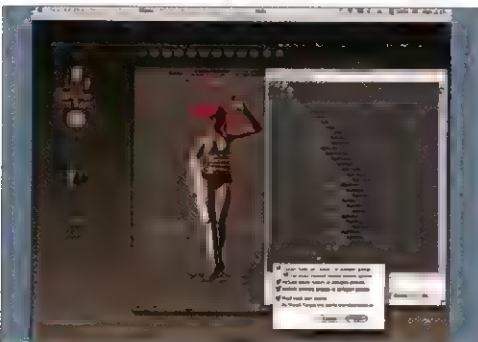
25 Rather than listing the entire hand pose settings, we'll use a 'preset' that was made earlier. Go to the Library > Hands > Tutorial Aiko 3 > Aiko Signal Hand. Double-click the hand image and apply it to the left hand. You can see how you could soon build up your own library of poses to recall later, again saving time and effort later on.



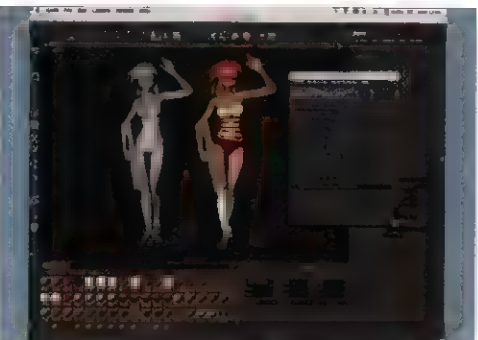
26 Now to her face. She needs more attitude, so we're going to bend her neck down and raise her eyes as though she's looking up at the viewer. Select her 'Neck' Bend 15°, Side -2°. Then select her 'Head' Twist -6°, Side -2°, Bend 7°. To make her look up, select each of her eyes and give them an Up-Down rotation of -20°.



27 Finally, the hair could do with being a bit longer, and it would be nice to add some movement to it, as though it were being blown by a breeze. Select the 'Nyoko Hair' and set the dials like so: 'Hair-Long 0.700', 'Windy-Right 1.600', 'Windy-Left 0.300'. Don't worry if the hair looks a touch sparse around the back. This is due to the preview not showing the reverse of the hair mesh.



28 At this stage, we could start to texture and light her fully in Poser. Since she's only one element in a larger scene, we're choosing to export her as an OBJ file for import into Cinema 4D. Go to the 'File' menu: File > Export > Wavefront Object. Click 'OK' in the subsequent dialog. In the 'Hierarchy Selection' box that follows, uncheck 'GROUND'. (See CD screenshots for other settings.)



29 Most applications will import an OBJ file easily from Poser, but there are some third-party plug-ins that can aid the process and save the manual labour of reapplying all the materials and textures you may have set up in Poser. Even if you decide to alter all her materials, being able to see which is applied to what object or selection helps enormously. For Cinema 4D, InterPoser is excellent.



30 As you can see, we've now either replaced most of the imported materials with those created in Cinema 4D, or heavily augmented them with additional shader effects. The base skin and hair texture maps remain the same, but we added a light scattering shader called 'Chanlum' to the skin and eyes, and changed from the default 'Phong' illumination method to 'Blinn', both

of which help to add to the realism of the materials. Due to time constraints, we decided not to create new bitmap textures for the clothing, and built a leather material from scratch using layered, procedural noise shaders, along with the 'Dirt' shader for some ageing. With careful, contrasting lighting, and use of hard and soft shadows, our Poser anime-style character comes to life. ●

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LIGHTWAVE

Stuck in the middle

Create a simple LScript to centralise one object in relation to others. Part of our series of articles on the fundamentals of coding

BY MARTIN HARRIS

FACTFILE

FOR

LightWave 7

DIFFICULTY

Elementary

TIME TAKEN

One hour

ON THE CD

- Full-sized screenshots
- Completed scripts
- Start scene file (without the script in place)
- Final scene files (showing the effect of scripting)

ALSO REQUIRED

ASCII text editor



Most *LightWave* users will know that LScript is a macro language that enables you to extend the functionality of Layout and Modeler without requiring the programming knowledge you would need to write a full plug-in. However, partially thanks to the lack of solid documentation, taking the first step into writing scripts can be both intimidating and frustrating in equal measure.

In this feature, we'll walk you through the principles of LScripting and demonstrate how to create a simple tool for Layout that takes a selection of multiple objects and positions the first of these into the centre of the others. The example scene supplied on the CD places a ball into the middle of some randomly placed arrows.

While NewTek has supplied us with tools for writing LScripts, they can be buggy and unstable. Thankfully, a script is nothing more than a text file, so we suggest using any text editor that you have to hand. The secret is to save the file with an LS extension instead of TXT. Now load up your editor of choice and we can start coding!

First of all, create a new text file and type the following into it. Note that LScript is case sensitive, so make sure you use uppercase and lowercase letters exactly as shown.

```
@version 2.2
```

```
@warnings
```

```
@name MoveMe
```

```
@script generic
```

```
generic
```

```
{
```

```
    Position(1,1,1);
```

```
}
```

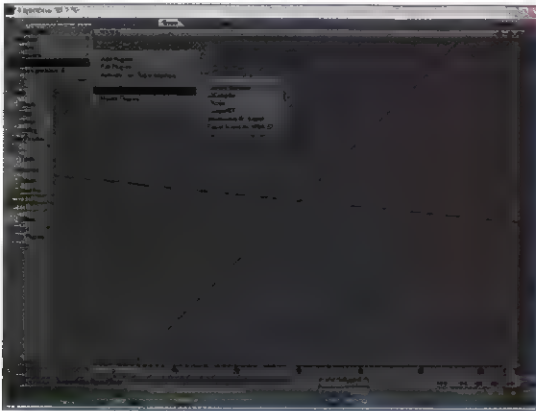
This may seem like a few lines of gibberish for a simple script, but the only line that actually does any work is `Position(1,1,1)`. The rest are used internally by *LightWave* to decide how to handle the script. Having said that, let's run through the code from top to bottom to figure out exactly what's going on.

`@version 2.2` tells *LightWave* that we don't want to run this script on anything less than LScript version 2.2. You can leave this line out and it will try to run the script in any version, but this may result in crashes or unexpected results.

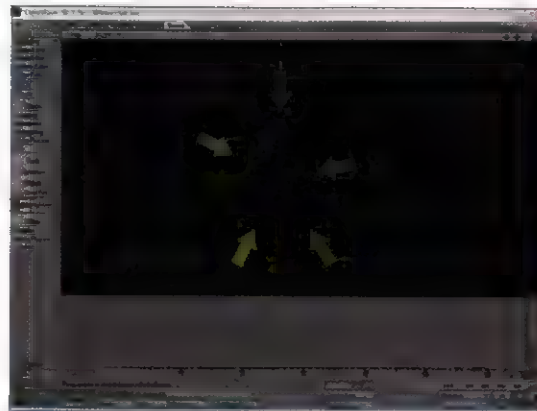
`@warnings` means that it will show error messages when run. This is particularly useful if we need to figure out what's going wrong while we're writing the script.

`@name MoveMe` sets the label of the button if we add this script to Layout's menu. Finally `@script generic` sets up our script as something that can be run directly on a scene in Layout. Other types of scripts, such as channel or motion modifiers, have different script settings and are generally more complicated to write.

After *LightWave* has used these lines to place the script in context, it looks for the block of code that's between 'generic {' and the closing '}' and runs those commands in the order that they're presented. In this case, there's just one command: `Position(1,1,1)`.



● As you can see from this selection of menu drop-downs at the scene stage, you can run a script directly from within the *LightWave* menu without actually installing it as a plug-in



● Your finished script will contain instructions to move an object into the centre of other selected objects, as clearly demonstrated in this *LightWave* screenshot

This moves the selected object to that coordinate (x, y, z). Save this out as 'move.ls'. Load up Layout, select the camera and run this script by selecting Layout > Plugins > Generic Plugins > LScript and by selecting the file you've just saved. You should now see the camera move to the coordinates we asked it to. Once you've finished calling your friends and family to boast of your achievement, we can change our script so that it actually does something useful.

We're going to present the full script one block of code at a time. Start a new text file and type in each block in sequence one after the other until it's complete. Start with the following

```
@version 2.2
```

```
@warnings
```

```
@name Centralise
```

```
@script generic
```

```
generic
```

```
{
```

There's nothing new here – we're just setting up the script. Now we should enter

```
scene = Scene();
target = scene.firstSelect();
obj = scene.nextSelect();
posTotal = <0,0,0>;
count = 0;
```

This block sets up some variables that we're going to need for later calculations. Variables are simply a way of storing details under a specific name so that we can reference them later. Here, we set up the following

'scene' becomes a snapshot of the scene as it is when we start running the script. From this, we can retrieve information about which frame we're on, selected objects and so on.

'target' stores the object that was selected first in the scene while 'obj' stores the second (next) selected object in the scene.

'posTotal' stores a vector of 0 in each direction. We'll add the coordinates of each object to the vector, giving us a total that can be divided by the number of objects to get an average position.

'count' will keep a count of how many objects we've used. We now need to add the next block of code

```
while(obj)
{
    posTotal += obj.getWorldPosition(scene.currentTime);
    count++;
    obj = scene.nextSelect();
}
```

Here we have a 'while' loop. This means that the loop will run over and over until the variable 'obj' is no longer valid – 'obj' moves from one selected object to the next and becomes invalid when we run out of objects.

Inside the loop, we do three things. First, we add the position of the current object (at the current time) to 'posTotal'. The symbol '+' means 'plus', so this line actually means 'posTotal equals its current value plus the position of the object at the current time'.

Second, we add one to 'count'. The symbol '++' means 'add one'. Finally, we move 'obj' onto the next selected object in the scene. If there is one, 'obj' is valid and the loop will run again. If not, we move onto the next block of code.

```
SelectItem(target.id);
Position(posTotal/count);
}
```

Now we make sure that the first object is the only one selected; otherwise all of the objects would move. We stored all the details of the object in 'target' right at the beginning, so we can select it using 'target.id'. The last line moves the selected object to the 'posTotal' vector, divided by the number of objects. This is the centre of the selected objects, though you should read the 'Going Further' box on the right side of this page for more information on this.

Now is a good time to drop some objects into a scene in Layout, select a handful of them and then run the script to see your first tentative steps into LScripting in action. This is a very simple script, but it could form the basis for something with real practical applications, for example, to automatically balance a character.

Martin Harris is a new media programmer based in Leeds. Some of his custom *LightWave* plug-ins, including *Twitch* from issue 48, are available from his website.
www.interestingmedia.co.uk

Not really central!

By averaging the positions, we haven't found the spatial centre at best, we have the centre of mass. The required calculations are beyond the scope of this tutorial, though a quick search of the internet will supply you with the formulae that require

View commands

Open up the Command History under Layout > Commands to see all of the commands run in the scene. These are the same commands you would use in an LScript to replicate the action.

Balance

By strategically placing weights on a character, you could use this script to move another null to the centre to give an indication of centre of mass. Adapt the script to a motion modifier and it would update the position automatically.

Scripting tip

The documentation on LScript is a bit hard to find on the NewTek website, so here's a direct link to everything you'll need: www.newtek.com/products/lightwave/developer/LW80/Blwsdk/docs/lscript/index.html

MAYA

Anime style

Master this quick, easy and artist-friendly method for creating anime-style shading effects in your renders, using the MEL scripts supplied on the CD

BY DAVID YING



Trying to achieve a traditional anime-style look to your rendered images isn't as difficult as you may think. Although you might imagine that to achieve this kind of hand-painted look might require a complex shader network - or, at the very least, a lot of work in post - we can assure you that these fears are groundless if you tackle the problem in the right way.

In this tutorial, we will show you the technique used to shade Celivina, the anime character above, in *Maya*, although we should reveal right at the start that it does involve an unusual workflow. First, we need to set up the scene lighting, before using a shading script from the CD (nprs.mel) to create a custom shading network that mimics a traditional anime 'look'. You'll also learn how to tweak ramps in the shader to make the final image appear more paint-like.

Often, 3D artists struggle to achieve the correct hues in their rendered images, and it isn't because they lack an understanding of colour. Instead, it's because many shading models try to mimic real-world surface effects. This requires many input attributes, such as light colour, surface reflection and diffusion, before you can produce a final render.

However, a complex shading model like this can take all your time to tune up and leaves no room to tinker with the colour. If you're not creating realistic graphics, these attributes make little sense anyway. The shading network used in this tutorial is complex enough to achieve a good anime-shading effect.

The NPRS (Non-Photorealistic Shading) script is actually a front-end window for building the shader. The shader itself has several ramps, and the colour of a ramp determines the exact colour that gets rendered. Colours at the top of a ramp are mapped to the brightest values on your character, while colours at the bottom are mapped to the darkest elements.

APPROACH TO SHADING

When you work with this shader, you should ideally think in terms of bright and dark tones. As with painting, as a bright colour falls off to a dark colour, you need to introduce a hue shift, so that you avoid the boring black 'fall off' effect that's found in regular shaders.

This approach is not about mimicking the exact shading of anime style, but more about bringing the good aspects of 2D painting to 3D, such as artist-controlled colour fall-off. Simplifying the shading workflow should leave more room for prototyping colours on your character. However, this isn't the ultimate anime shading approach. You should take this concept and incorporate it into your own shaders. You can get up and running by using the Celivina character model and the NPRS shading script on this issue's CD.

Freelance 3D artist David Ying is currently working on a 3D remake of the classic role-playing game, *Chrono Trigger*. He recently travelled to China to train 3D artists.
www.yinako.co.nr

FACTFILE

FOR

Maya

DIFFICULTY

Intermediate

TIME TAKEN

Half a day

ON THE CD

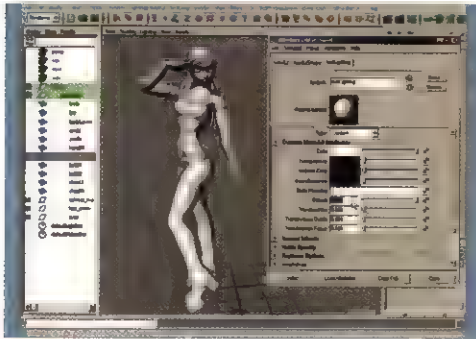
- Full-size screenshots
- Start and finish scene files and files that correspond with steps 7, 13, 21, 25 and 28
- An accompanying MEL script

ALSO REQUIRED

N/A



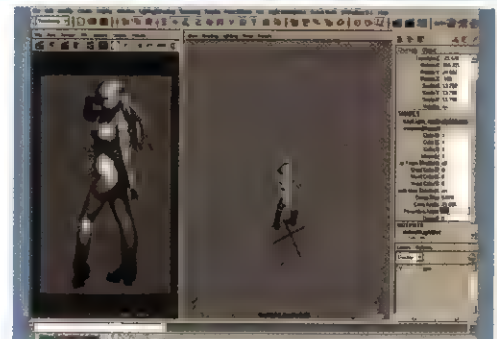
STAGE ONE | Setting up lighting for non-photorealistic shading



01 Open the unshaded Celvina model from the CD and make a new Lambert Shader of white Colour and 1.0 Diffuse. Assign it to the Celvina group node from Outliner. When we light the scene, we'll get a good preview of a full range of grey tones from white to black, which is important as it provides more deterministic shading later on.



02 Establish a camera angle by choosing Create > Cameras > Camera, and place it on the left side of the character. In this screenshot, see how the angle of the camera reveals the other side of the face. This is the angle to show anime faces from. Set the render resolution to 3,000 x 5,000 pixels in Render Global; Pixel Aspect Ratio should be 1.0. Also, rename this camera to ShotCam.



03 We need to create our first key light, and we're going to use Spot Lights for all of our lighting. Choose Create > Lights > Spot Light and place it by selecting the light and by choosing Panels > Look Through Selected. This key light should reveal the model's face and main body parts from above. A test render should reveal a good range of grey tones. Rename this keyLight_topBody01.



04 The first key light fails to capture all of her body, so place a second key light and aim it at her shoe. Place it low and to the front left of her body. Lower the Intensity to about 0.7 and add Penumbra Angle and Dropoff to soften the edges of the spotlight, so that there's no harsh edging on her body. Rename this keyLight_shoe01.

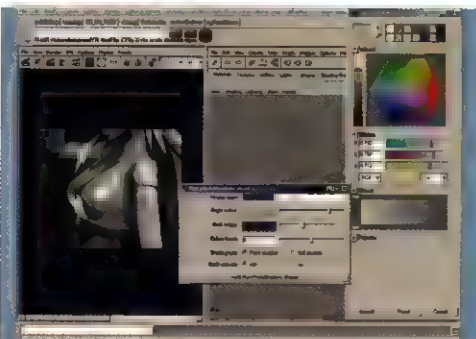


05 We now employ a rim light to provide more contrast. Create a Spot Light of Intensity 2.0 and place it on her right side. From Render View, choose IPR > IPR Render > ShotCam, then use Look Through Selected on the rim light. Select her bra geometry piece and press [f]. You can pull back the camera and tumble the rim light around her.

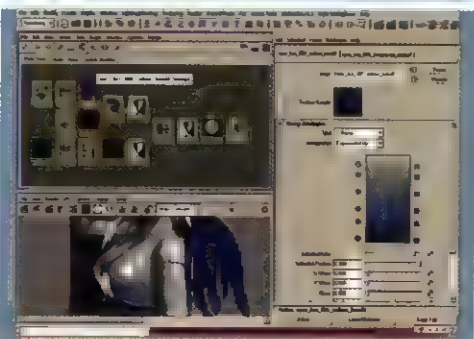


06 The rest of the lighting should use several smaller fill lights to illuminate darker areas, but remember that our aim is to have a good range of greys in this set-up. It's OK to have areas fall to black, but avoid areas of constant white or black. Check the final test render against the image on the CD, and rename these lights accordingly.

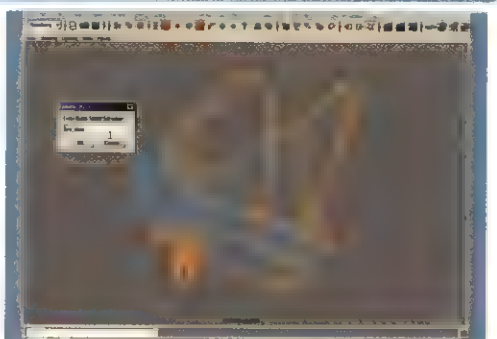
STAGE TWO | Shading using the NPRS script



07 We'll shade Celvina's bra first. Run the nprs.mel script (check the CD for installation instructions). From the NPRS window, rename the shader to nprs_bra_001 and hit [Enter]. In the Bright and Dark colour boxes, choose cyan with the following attributes: R0.589, G0.661, B0.672 and a dark blue (R0.234, G0.258, B0.366), then click 'Build...'. Assign this shader to her bra and do a test render.

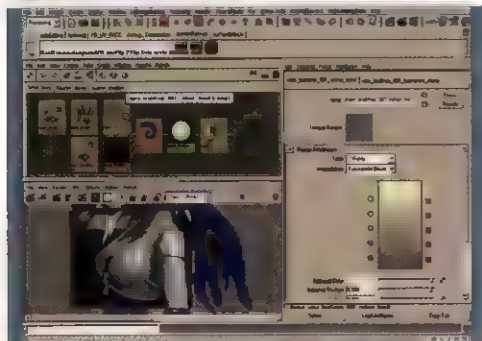


08 Select nprs_bra_001 from the material tab in Hypershade, choose Input and Output connections and select the colour ramp called nprs_bra_colour_band. Open its Attributes and start up an IPR render. Add a new yellow (R0.886, G0.843, B0.651) at the top of the ramp. This should appear as the brightest part on the bra, so tweak the other colours and check the screenshot for reference.

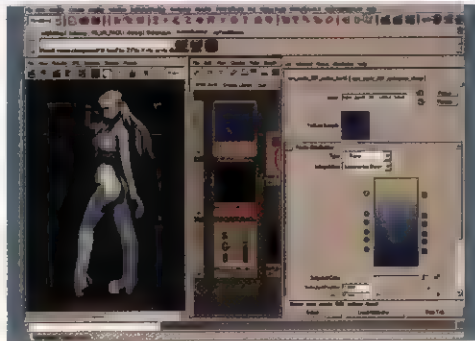


09 To tighten the specular, select nprs_bra_001_specShader that's part of nprs_bra_001, reduce its Eccentricity to 0.1 and adjust the intensity of the rim light if the specular is still too strong. To shade the strap of the bra, select all the faces of the bra strap, including the border that surrounds the bra, and choose Create > Sets > Quick Select Set. Name it bra_strap.

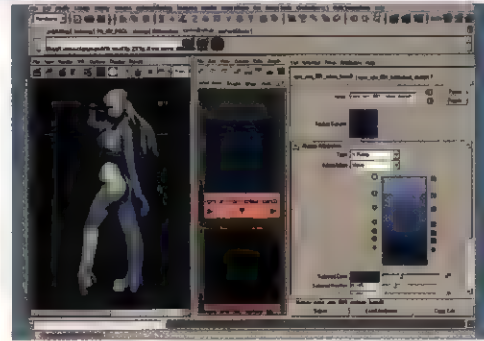
STAGE TWO (Continued) | Shading using the NPRS script



10 Create a new NPRS shader of cream yellow (R0.974, G0.974, B0.834) falling off to a grey (R0.525, G0.537, B0.588). Choose 'build no specular' in the NPRS window and name it `nprs_braStrap_001`. Select the strap and assign the new shader to those faces. Render with IPR and tweak the colour ramp to get a yellow-to-blue fall-off.

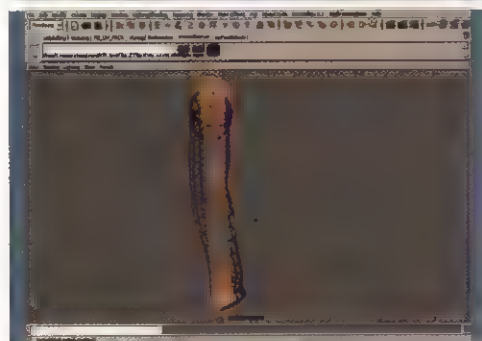


11 Make another NPRS shader with the same colour fall-off as the bra and assign it to the bodyLower geometry. We won't use the bra shader, because the lighting on the lower body is different. Modify the colour ramp for this shader while in IPR mode, and use the screenshot as a reference point.

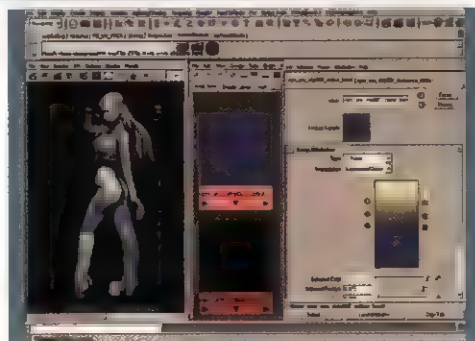


12 Make one more NPRS shader, with cyan-to-blue fall-off with no specular. Name it `nprs_arm_001` and assign it to her arms. Start an IPR Render, open the attributes for the `nprs_arm_001_colourBand` and, from the Interpolation menu, choose None. Tweak the colour positions (see screenshot) and switch back to Exponential Down.

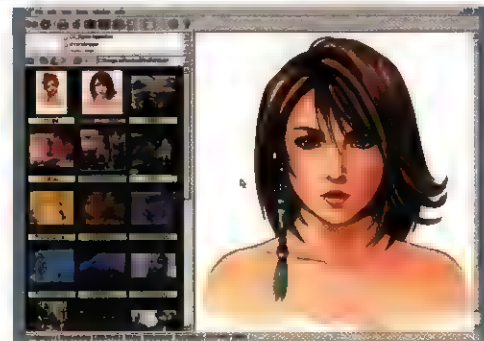
STAGE THREE | NPRS shading at its best



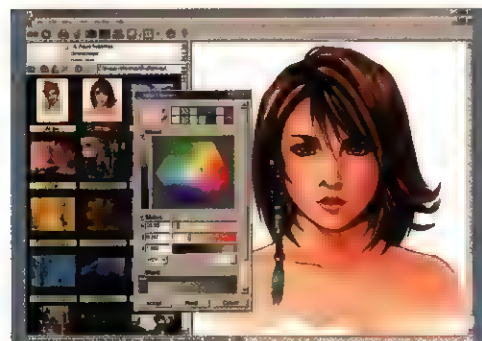
13 To shade the strips on her left arm, select it and, from the Modelling panel, choose Show > Isolate Select > View Selected. Select the protruding faces at the tip of the arm, then use the Paint Selection tool to select the rest (this could take a while). When you're finished, choose Edit > Quick Selection Set and call it `armLf_strip`. Choose Isolate Selected > View Selected again.



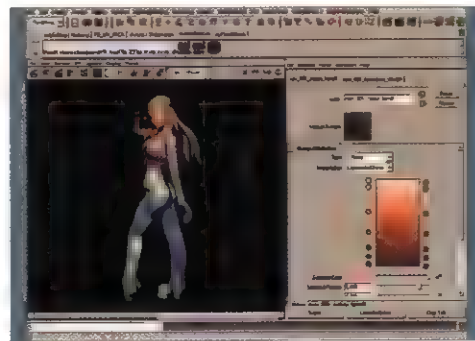
14 Make a new NPRS shader of similar quality to the `bra_strap` colour fall-off. Select 'no specular' in the NPRS window and call this shader `nprs_armStrip_001`. Select the previously saved faces from Edit > Quick Selection Sets > `armLf_strip`, and assign `nprs_armStrip_001` to them. Too many colour bands can be difficult to edit, so delete two of the in-between colours.



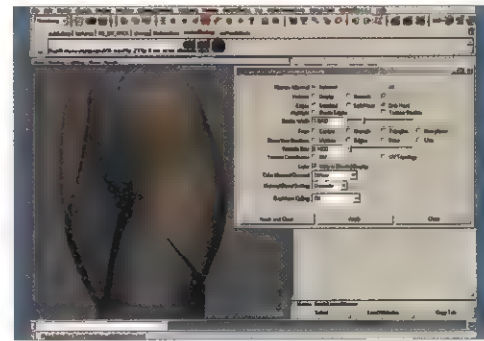
15 Now to shade Celivina's skin. You'll notice from the previous editing of colour ramps that the shading effect is only as good as your colour mixing as a traditional painter. All the magic happens in the colour ramps, so for the skin, this will matter a great deal. At this stage, it's helpful to get skin reference images from concept art or paintings, such as this example by Tetsuya Nomura.



16 Make a new NPRS shader and name it `nprs_skin_001`. Press [Enter] and click the Bright Colour box. In the Color Chooser, select the Maya icon on the menu bar and select Attach to Main Window to uncheck it. Now you can use the eyedropper to pick colours outside of the Maya window. Select a bright and dark skin tone from the concept art in the screenshot.



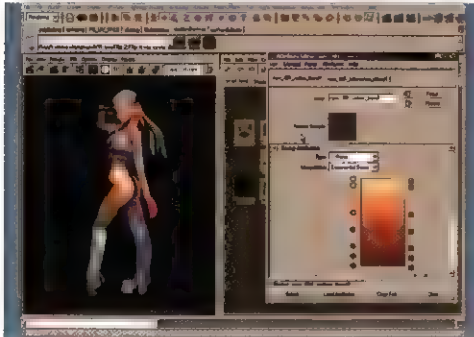
17 Assign `nprs_skin_001` to Celivina's body, do an IPR render and open the `nprs_skin_001_colourBand` ramp - add a little yellow at the tip of the ramp and a greyish blue at the bottom of the ramp. As a reference guide, use the Color Chooser to lift these colours from the screenshot. As ever, you can find a full-size version on the CD.



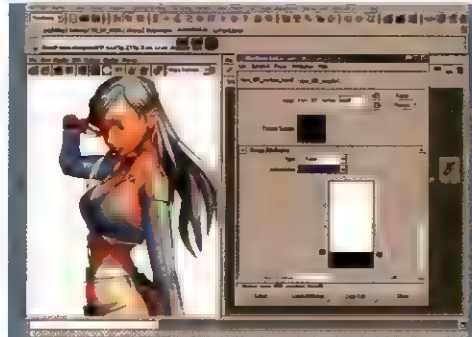
18 We need to also assign this shader to her bottom. Use Isolate Select > View Selected to only show her lower body. Select her lower half and choose Display > Custom Polygon Display option. Select Only Hard, hit 'Apply' and this will show a hard edge border between her bottom and her legs. Use the paint selection tool to select all the faces of her bottom and save the selection as 'Bottom'.



STAGE THREE (Continued) | NPRS shading at its best



19 Recall the previous selection from Edit > Quick Selection Sets > Bottom and assign `nprs_skin_001` shader to these faces. Select `handLf` and `handRt` geometry and assign `nprs_skin_001` to them as well. Do another test render to check that all the colours in the ramp are on the image.

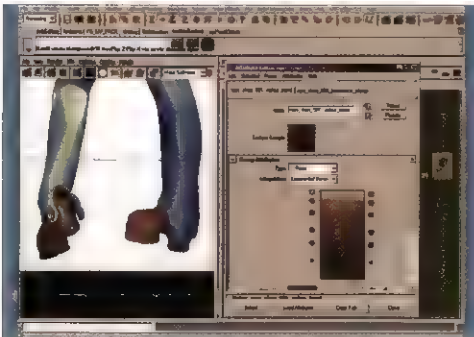


20 Start an IPR render and open up the Hypershade. Click Input and Output connections on the `nprs_skin_001` shader and find and select the ramp called `nprs_skin_001_contour_band` that's connected to BlendColours (this controls the black contour). Open its attributes, slide the black and white colours together, then slide them down to make the contour less apparent.

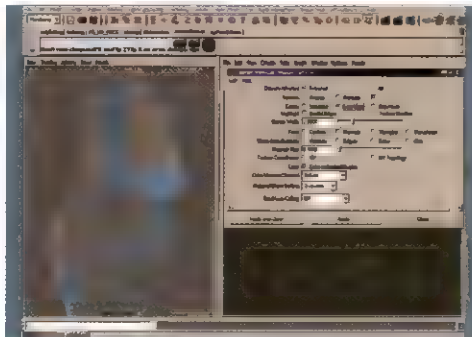
Warm and cool colours

You should now have a good understanding of how the NPRS shader works, but the real magic happens in the artist's mind - it's you who decided where the colours should be. Try to imagine the colour ramp as a one-dimensional colour palette, and try mixing from warm to cool colours on the ramp. The Maya blender in the Color Chooser is useful for this kind of work. Load a warm colour in the left blend box and load a cool colour in the right blend box. Select a colour in the middle and load it as a new colour in the mid-range section of your colour ramp.

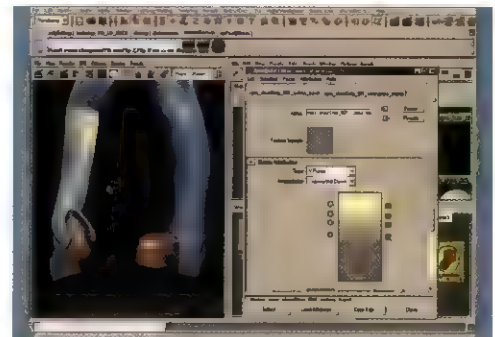
STAGE FOUR | Shading Celivina's accessories



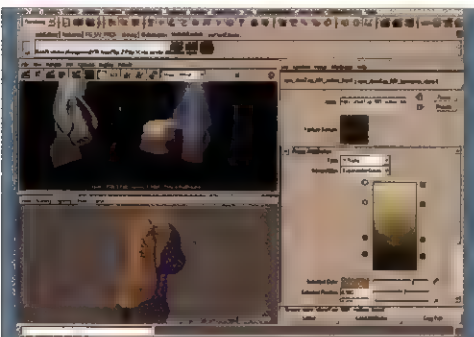
21 We'll now shade Celivina's shoes, which require three shaders. Make a new NPRS shader and call it `nprs_shoe_001`, then select a light coffee colour at the bright end and a brownish magenta at the dark. Select the `shoeLf` and `shoeRt` geometry and assign `nprs_shoe_001` to them. IPR render your scene and tweak the colour ramp `nprs_shoe_001` to get all the fall-off colours on the shoes.



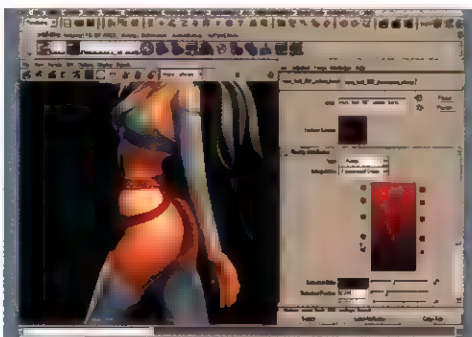
22 Use Isolate Select > View Selected to display just the `shoeLf` geometry. Use the Paint Selection tool to select the protruding strip at the back of the heel and select the strip all the way around the shoe, including the front. Display the hard edge for the geometry to see where the border is. Save this selection using Quick Selection Set, and name it `shoeLf_strip`.



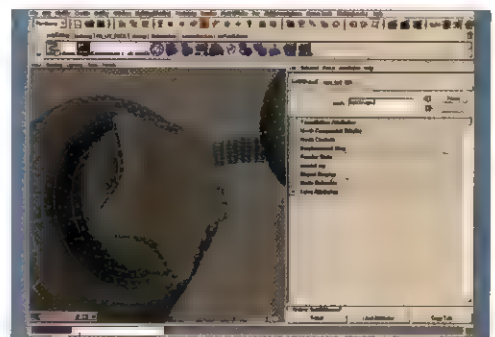
23 Select the same strips on the right shoe and save the selection as `shoeRt_strip`. Now make an NPRS shader called `nprs_shoeStrip_001` of similar colour fall-off as the strips on her arm. Select each face set by recalling it from Quick Selection Sets, and assign `nprs_shoeStrip_001` to them. Remember to do an IPR render and tweak the colour ramp, so that colours are not too even.



24 Select the `shoeLf` geometry before choosing Isolate Select > View Selected, this time using the Paint Selection tool to select all the faces above the shoe strip. Save this selection as `shoeLf_top` and select the same top faces for the right shoe. Make a new NPRS shader of antique white to tan brown (see screenshot for colour reference), and assign it to both face sets.

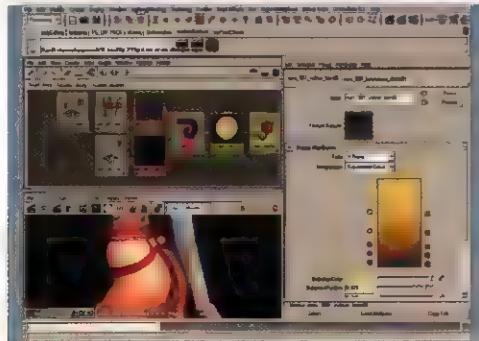


25 We've used three colours to make Celivina's belts. First, create an NPRS shader of Indian red for the bright colour and a maroon for the dark. Name it `nprs_belt_001` and assign it to `belt01` and `belt02`. Render with IPR and add dark magenta in the middle. Make another NPRS shader of gold colour fall-off and name it `nprs_starYellow_001`. (See `5_celvina_shading03.mb` on the CD.)

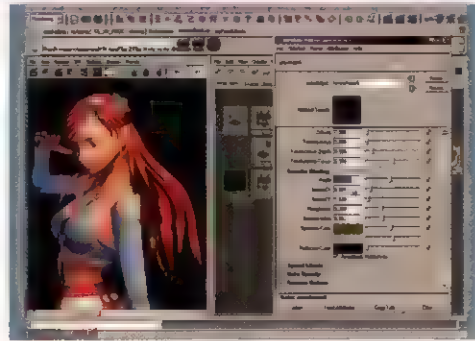


26 We'll use a script by Mike Hovland to select the stars on Celivina's belt. Source the script called `mhselectpolysheel.mel` on the CD and run it by typing `mhselectpolysheel` in the command line. Nothing happens. Now go to face selection mode and click on a face of the little star at the back of her belt, which will select the entire polyShell (much like element selection in *3ds Max*).

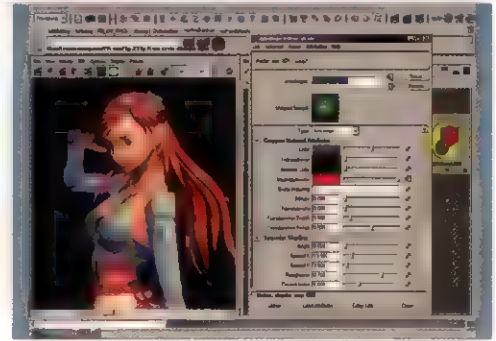
STAGE FOUR (Continued) | Shading Celivina's accessories



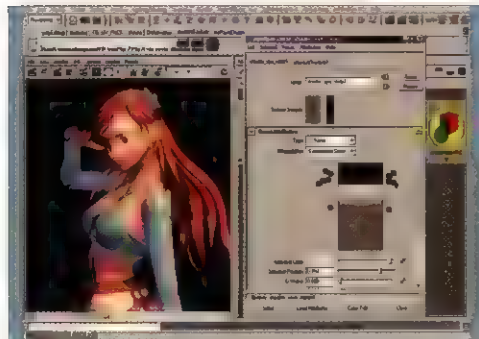
27 Select the two stars at the back of her lower belt using `mselectpolysphere` and assign `nprs_starYellow_001` to them. Below the star is a little button. Select its entire polyShell and assign one of the lighter shaders; we used the `nprs_bra_border_001` shader. Run `mselectpolysphere` again to turn off the polyShell selection mode. Use the screenshot as a colour reference.



28 Create a new NPRS shader for Celivina's hair using an Indian red to dark red fall-off and call it `nprs_hair_001`. Do an IPR render and open the Hypershade. Locate and select the `nprs_hair_001_specShader`, open its attributes and switch the shader from Blinn to Anisotropic. Adjust the angle under the Specular Shading setting until you get a nice highlight. (See `6_celvina_shading04.mb` on CD.)



29 You can change the specular from the NPRS shader to whatever you want. Usually, Anisotropic will give more interesting highlight shapes. Create a new Anisotropic shader and call it `shader_eye_001`. We'll use this for her eyes. Reduce its diffuse to 0 and, in the Incandescence channel, plug a ramp node to it and set the type to 'U Ramp' before assigning it to her eyes' geometry.



30 Start an IPR render and open the new ramp. Set the interpolation to Exponential Down, set a white to grey from middle to bottom of the ramp, and add a bit of dark red between two blacks on top of the ramp. You need to check your IPR render and tweak the ramp so that colours band tightly together without too much interpolation.

Assigning Hotkeys

Selecting faces on large models can be difficult. To use Paint Selection effectively, open up the Paint Selection option box, rest the tool and set the Paint Operation to toggle, then close it. Go to the Hotkey Editor and assign a Hotkey called `ArtPaintSelectTool: I use [Alt]+[s]`. Now left-clicking on selected faces will deselect them. To always add faces to the selection, hold down [Shift] and click-drag; to deselect faces, hold [Ctrl] and click-drag. This tip may help you to carry out the earlier stages of this walkthrough more easily.



31 The rest of the shading workflow is the same for unshaded objects. If some parts of the bright colour on the ramp are not coming through, you can remedy this by adding more spotlight for specific areas. In the final image, we added four more spotlights linked only to Celivina's eye geometry. Because the eye shader uses an anisotropic highlight, we can make it thin and long to get

it to look like traditional anime-style eyes. If you don't particularly like the border effect, you can remove it by deleting the black colour in `nprs_XXX_contour_band` ramp. For accurate contours, use *mental ray's* contour shaders and composite the render over the NPRS-shaded image in post-production. Here's the final image with all the pretty shaders on display. ●



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Studio Ghibli's latest animated feature. Although famed for its 2D work, the studio increasingly incorporates 3D elements such as this one in its movies

kings of the castle



Famed for its sumptuous hand-drawn animation, Japan's Studio Ghibli is increasingly turning to 3D in its work. We went to visit the Oscar-winning facility to discuss its working practices, its design philosophy - and the monstrous, mechanical, all-3D star of its latest movie, the breathtaking *Howl's Moving Castle* **BY JASPER SHARP**

The 21st century is not an easy time to be a 2D animator. Advances in 3D technology have seen US studios such as Disney and DreamWorks SKG virtually abandoning traditional cel animation, while even in Japan, recent releases from prominent figures such as Katsuhiro Ôtomo (*Steamboy*) and Mamoru Oshii (*Ghost in the Shell 2: Innocence*) have self-consciously integrated 3D CG models with hand-drawn characters, as much in a lavish celebration of technology itself as in a pursuit of the Holy Grail of cinematic realism.

Against all this, Studio Ghibli's choice to adhere to the intrinsically non-naturalistic look of cel animation may appear almost quaintly old-fashioned. Yet more than being merely a continuation of a deeply ingrained tradition, the studio's predominantly hand-crafted output illustrates the medium's ability to transcend everyday reality, transporting us to lavish fantastical worlds in which literally anything can happen. It's a formula that has ensured that Ghibli's films have consistently topped the box office in Japan, and received critical acclaim throughout the world, an achievement crowned by the Oscar for Best Animated Feature awarded to *Spirited Away* in 2002.

The studio's latest creation, *Howl's Moving Castle*, is among its most vivid to date. Adapted from British writer Diana Wynne Jones's children's novel of the same name, it tells the tale of Sophie, an 18-year-old girl transformed into a wizened old crone by a magic curse. This is set against an Olde European backdrop in which two warring states continue to pit themselves against one another in a futile and unceasingly destructive war.

3D ANIMATION IN DISGUISE

Given that director Hayao Miyazaki has stated that he finds 3D ill-suited to Ghibli's in-house style, one might wonder if computers are used at all within the company. But according

to Director of Digital Animation, Mitsunori Kataama, such technology is playing an increasing role in adding new levels of detail to Ghibli's richly drawn worlds: "CG is suitable for things that can't be drawn by hand. There are many things that you can draw easily, but there are also many things that you can't. That's my job."

It comes as no real surprise to discover that the studio's philosophy when it comes to integrating CG components into

"Whatever we can draw by hand, we do. But we use 3D animation whenever it's convenient."

MITSUNORI KATAAMA, DIRECTOR OF DIGITAL ANIMATION, STUDIO GHIBLI

the body of its works differs radically from that of other animation houses. While many studios harness the ability of modern software to create perfect photorealistic imagery, Ghibli's aim is to make the 3D look as unrealistic as possible - or rather, to make it appear hand-drawn. Working exclusively with *Softimage XSI*, Ghibli's animators use an arsenal of tools to hone



• Although crucial, 3D is deployed sparingly in the film, with Studio Ghibli continuing to rely on 2D painting for characters and most of the backgrounds

The castle itself is entirely digital. Thirty separate models were constructed in Softimage XSI, each one tailored to the precise angle from which it appears in a particular shot.



the 3D images, before further post processing to ensure that they fit seamlessly within the rest of the film.

Ghibli's 3D graphics department was founded in 1995 at the beginning of production of the epic eco-fable *Princess Mononoke*, and initially consisted of just three animators. Their biggest challenge lay in the dynamic early attack of the enraged Tataru Gami, a Boar God transformed by hatred into the form of an evil mass of writhing, snakelike tentacles. The boar was drawn and inked physically, while CG was used to animate each of the tentacles, which were then rendered using the Softimage Toon Shaders developed by Michael Arias.

The whole Tataru Gami sequence was to total 20 shots, but after six months of development, not a single one had been

Even today, the studio's 3D graphics department remains a small-scale affair. "You find more people in the studio with pens and brushes," Kataama comments. Of the 150 animators who worked on *Howl's*, just 10 were digital animation staff.

FLYING THE FLAGS

In rendering the 3D models to disguise them as 2D drawings, the digital animation staff drew much of their experience from the 1999 movie *My Neighbours The Yamadas* (1999), directed by Miyazaki's co-partner at Ghibli, Isao Takahata. Though this film strove to emulate the same flat line-drawn sketch look of the popular newspaper serial on which it was based, a large proportion of its budget was lavished on the CG work.

Like *Princess Mononoke* and *The Yamadas*, much of the work on *Howl's* involves the use of Softimage XSI's built-in Toon Shaders for work that would be too time-consuming to undertake by hand. Sophie's adventure begins in a medieval city whose citizens are engaged in a war with a distant enemy. To conjure up the suitable all-consuming atmosphere of wartime patriotism, Miyazaki makes heavy use of flags, either as moving parts of the background throughout many of the scenes, or in one sequence with dozens held aloft during an impressive street pageant.

Animating the flags in Softimage XSI was fairly textbook stuff, according to Kataama. Once modelled, the wireframes were animated as if being pushed by an invisible mass of air to give the impression of billowing in the wind. The pattern of light and shade on the flag was calculated according to the raised and lowered planes of its rumpled surface, and XSI's RenderMap feature used to bake this lighting information in with the texture of the flag. The whole flag was then Toon Shaded to give it a 2D anime look in keeping with the rest of the film.

But problems emerged when it came to the issue of the shadows. Making them convincingly blend in with the hand-drawn backgrounds was a painstaking job that required a lot

"When I entered Ghibli, I didn't think that CG could do so many things. There are still limitations, but they're diminishing."

MITSUNORI KATAAMA, DIRECTOR OF DIGITAL ANIMATION, STUDIO GHIBLI

successfully completed. Initially resistant to the use of CG, Miyazaki grew impatient with the slow development time, insisting that the animation should have been done completely by hand. But while the finished sequence eventually amounted to only five shots, the end results were enough to impress the director that 3D had a future in Ghibli's work.

Princess Mononoke eventually featured 50 CG shots. On Miyazaki's next film, *Spirited Away*, this figure increased to 100 (eight per cent of the entire film), while *Howl's Moving Castle* sees the proportion increase further, with a total of 200 out of 1,400 shots (roughly 15 per cent) using CG in some form or another. But as Kataama states frankly, there are no real plans to push this ratio any further. To do so would detract from the essence of a Ghibli film: "We only use CG when it's convenient. Whenever we can draw something by hand, we do."

IN DEPTH | 'Constructed like an origami model' - the inner workings of the moving castle



01 Rather than produce a single model that can be viewed from an infinite number of perspectives, around 30 individual models were created, one for each shot the castle appears in, tailored to the angles and distances it's viewed from.

02 This atomised view of each of the castle's components shows how it's constructed within *Softimage XSI* as a number of overlapping curved surfaces and 2D planes, all of which are animated in relation to one another.



03 The hand-drawn designs for each of the castle's 'body parts' were mapped onto the model's individual surfaces to create the details of the gun turrets, portholes, smoke stacks and gangplanks of which it is made up.



04 To generate the castle's lumbering movements, the animation set-up used an FK tree structure, with the castle's body corresponding to the root of the tree, and root movement spreading along the branches to the child objects.

05 Each castle model had from 30 to 80 parts. "There are also more than 40 Z axis animation function curves to realise complex movements such as shaking," says Director of Digital Animation, Mitsunori Kataama.



06 Finally, the castle's data was passed to *Toonz* as 2D rendered images to be composited onto the backgrounds. The steam gushing from its joints is hand-drawn, but the *Scintillae* particle plug-in was used for the stream of black smoke it trails.



● Some of the many flags featured in the film. To animate them all by hand would have been impractical, so Ghibli turned 3D and Softimage XSI's Toon Shaders

of tweaking behind the scenes. When the Toon Shading component alone was used, the computer would separate the shades too precisely, and the results would look messy compared to the cleaner 2D design of the rest of the movie. If the flags were drawn by hand, the artist would be able to pay more attention to separating the different levels of shadow, either simplifying the image or using 'hatching' techniques to blend between the light and dark areas.

It was therefore necessary to manually simplify the Toon Shaded flag's shading and bring it closer to the 2D cel look of the hand-drawn images. This was done using Adobe After Effects, with successive Blur, Echo and Bump passes employed to soften

"My aim is for the blend of 3D and 2D in our movies to be seamless, so you really can't tell which is which."

SHINJI KATAAMA, DIRECTOR OF DIGITAL ANIMATION, STUDIO GHIBLI

the edges and round out the more complicated areas of shadow. It was a far more time-consuming process than the end results suggest, but with the number of scenes with flags on display, and the complexity of each of their designs, to create them in any other way would have been impossible.

But perhaps the most intriguing use of CG is in the film's eponymous moving castle. A lumbering, segmented contraption looking like a giant pig on chicken's feet, the fortress is as much the star of the film as any of the lead characters, and one, Kataama admits, whose design betrays a subconscious debt to Terry Gilliam's surreal animations for *Monty Python*.



● Matching the Toon Shaded 3D footage to the background plate meant extensive post work, as this series of After Effects tests indicates

Rather than being built as a consistent 3D model to be re-utilised from shot to shot, the castle was constructed a bit like a piece of origami, as a number of overlapping curved surfaces and planes. There were around 30 models of the castle in total, one for each of the scenes in which it appears.

The surface detail was all drawn by hand. Designs for each of the castle's 'body parts' were mapped onto the model's individual surfaces to create the gun turrets, portholes, wooden structures, smoke stacks and gangplanks of which it is constructed.

The decision to realise the castle using XSI came about due to the complicated movements of each of the castle's constituent parts in relation to one another. A conventional tree structure was used for the animation set-up, with the castle's body corresponding to the root of the tree. The tree uses a Forward Kinematics structure so that the root movement spreads to its descendents.

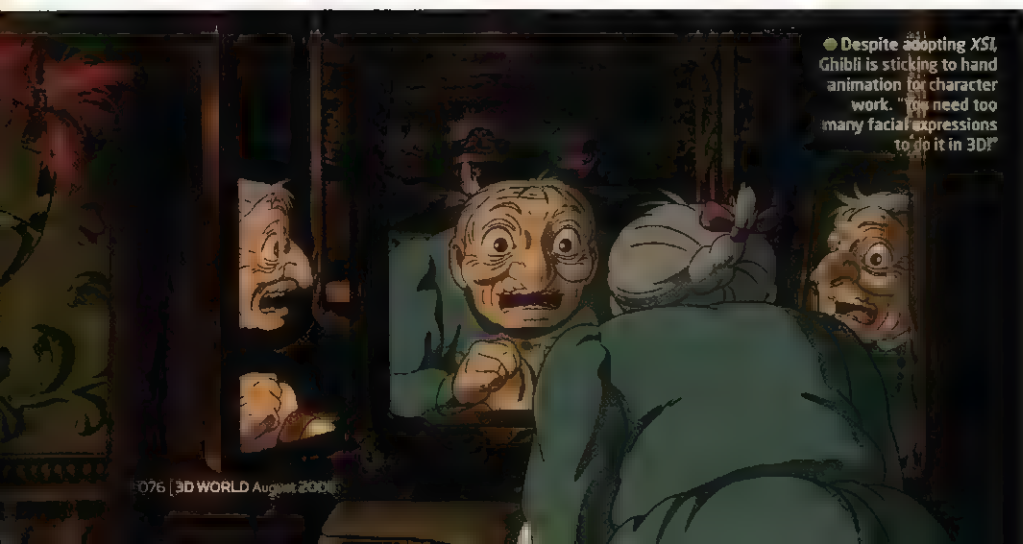
The X and Y coordinates control the translation, while the Z coordinates control the castle's complex shaking and shuddering movements. There are 40 such movements compounded in the tree structure. According to Kataama, "the structure's ramification is complex; the deepest structure has more than 20 branches."

BUSINESS AS USUAL

Despite the decision to create the movie's inanimate star in 3D, Kataama insists that character design is still the exclusive domain of the traditional artist, and looks set to remain so. While CG was used extensively in the 25-minute short *Ghiblies Episode 2* that accompanied the theatrical release of *The Cat Returns* in Japan in 2002, the studio stresses that this was an experimental work, not typical Ghibli. "There's no way we can beat drawing characters by hand. That's one of the advantages of hand-drawn animation, and one of our strengths. There's far less freedom if you use computers for it. You need too many facial expressions."

But while expressive characterisation and intricate background designs remain the hallmark of the Ghibli style, it seems clear that computers play an important supporting role in bringing the fruits of Miyazaki's fertile imagination to the screen. "When I entered Ghibli, I didn't think that CG could do so many things," says Kataama. "There are still limitations to what it can do, but its role is expanding. My aim is for the blend of 3D and 2D to be completely seamless, so you really can't tell which is which." ●

Howl's Moving Castle was released in Japan on 20 November 2004 and opened in the US earlier this summer. It will be released in the UK in September via Optimum Releasing



● Despite adopting XSI, Ghibli is sticking to hand animation for character work. "You need too many facial expressions to do it in 3D!"



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Produce an image in *3ds Max*, or a 2-3 minute showreel in *Combustion*. If your entry is below 5MB, you can email it to 3dw.competition@futurenet.co.uk with the subject line 'Combustion competition'. If it's larger than 5MB, burn it to CD/DVD and mail it to: *Combustion Competition*, 3D World Magazine, Future Publishing, 30 Monmouth Street, Bath, BA1 2PW. The closing date for all entries is 18 November 2005. Your work will be judged by an expert panel from 3D World, Computer Arts, Autodesk and Hayes Davidson.

● This furry little critter is the star of *Gopher Broke*, a Blur Studio creation that utilised the power of 3ds Max.



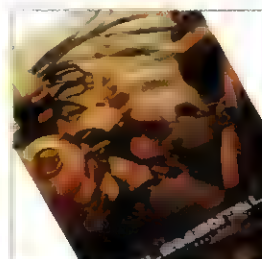
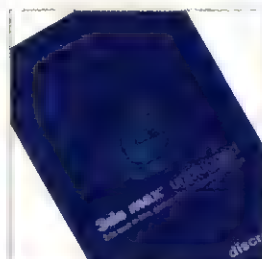
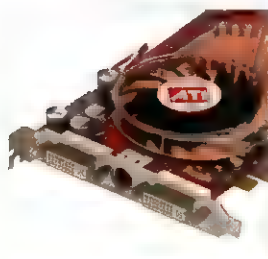


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Q&A

SOLUTIONS / FIXES / ADVICE

QUESTION OF THE MONTH

Submitted by Ian, via email

Q&A TIP

● XPresso is one of the most intimidating parts of C4D, but don't worry - once you get into it, you'll find that it can speed up many parts of your animation workflow

CINEMA 4D

"How can I rig pistons to move with each of my robot's joints?"

This month's question is answered by Adam Watkins. Adam is the Director of the Computer Graphic Arts program at the University of the Incarnate Word in San Antonio, Texas. He hates robots

Hydraulic pistons are everywhere. Almost every piece of heavy machinery is driven by some sort of hydraulic system. Take a look at those huge machines that move massive amounts of dirt using awesome quantities of power, and there they are - those shiny piston mechanics are obviously an essential part of the process. Using hydraulic pressure, the piston is able to expand or contract to drive a shovel or arm.

As such, it makes sense when designing mechanical creatures that this sort of piston should be attached to the joints of the character. Elbows, knees and shoulders would logically be driven by a hydraulic (or other otherworldly fluid) system.

But, as much sense as it makes to have these pistons on a robot and as easy as they are to model, getting them to actually function or function visually - anything close to the way they should do is quite a challenge. The idea is that each time you bend a knee or an elbow, the piston needs to do three important things. First, it needs to stay connected at both moving parts. Second, it needs to expand

and contract to match the movement. Finally, it has to rotate appropriately. Of course, you could manually go in and scale, move and rotate these pistons after you've animated your robot, but this makes for an extremely clunky workflow. If you simply make the piston a child of one of the limbs, it will rotate to match the limb but won't expand and contract as it ought to.

PISTON PROBLEMS

This problem is a perfect opportunity to illustrate some fairly new and powerful functionalities in Cinema 4D (9.1). Specifically, it enables us to once again make use of the ever-useful XPresso functions to create custom expressions without having to write any code.

The tutorial here will even enable us to work with some really complex issues concerning pistons, the biggest being that the scaling of the piston doesn't enjoy a linear relation with the rotation of the joint. In other words, where you might think that simply driving the scale by the rotation would do the trick, you'll find that the piston is too short through much of the limb's rotation. Using C4D's Driver/Driven combination and especially its graphing capabilities, we'll be able to establish a much more complex relationship that allows the piston to function flawlessly, leaving you to animate the actual movement smoothly.

FACTFILE

FOR

Cinema 4D v11

DIFFICULTY

Intermediate

TIME TAKEN

About 45 minutes

ON THE CD

- Start file (c4d)
- Final animated movie

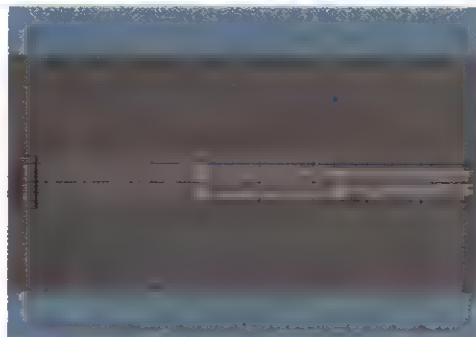
ALSO REQUIRED

N/A

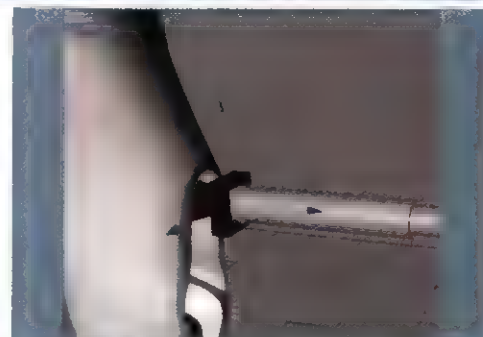
STAGE ONE | Logistics of the scene



01 Ensure you start with the limbs that are going to be attached to the piston (see 3DWWatkinsPiston.c4d on the CD). Without mounting locations where the pistons connect, no amount of rigging will save the effect. It should appear as though the piston's mountings can rotate as they would in real life. In this case, there's a rotating mount at the top and a washer-mounted rotation on the bottom.

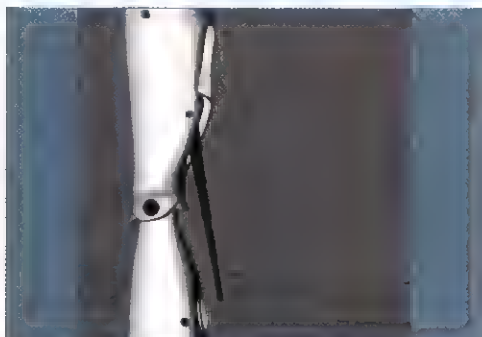


02 For an arm like this, you need to work out the logistics of what sort of hydraulic piston will allow for a full range of realistic motion. Unless you want to severely limit the rotation of the arm, you'll need to have fairly short sections of shaft. In this case, a telescopic shaft comprising several short segments will enable the arm to realistically bend to an almost 'complete' position.

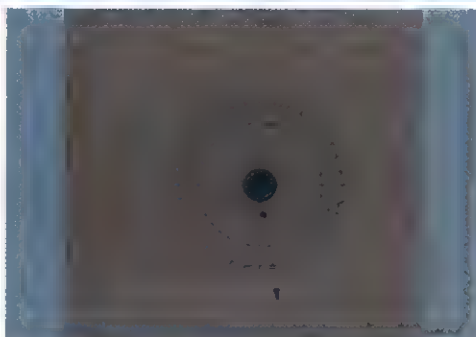


03 Place each of the piston segments as children of each other, with the largest being the parent. If you scale this parent shaft, all the others will scale down proportionally. Now make sure that the rotation for the shaft group (in this case, with the shaft holder) is set with its axis of rotation back inside the arm.

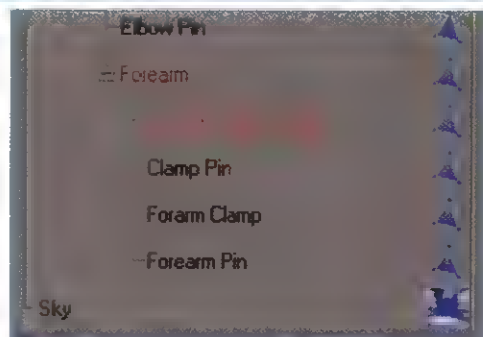
STAGE TWO | Targeting the piston and laying the groundwork



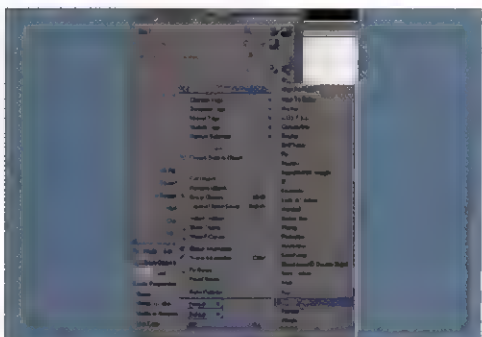
04 Select the shaft and scale it out so that it's the appropriate length. Do this with the arm fully extended, or at an angle of 0 degrees. You need to have a default length set up when the arm isn't bent at all. With this measurement in place, you can start scaling the piston shaft in relation to the bent arm as soon as the arm's angle increases beyond 0 degrees.



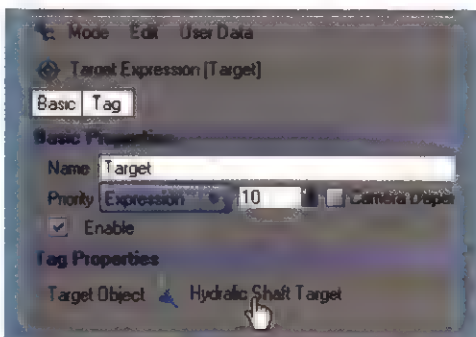
05 To get the piston to always point at the forearm (while it's anchored to the upper arm), create a small object (in this case, it's actually a duplicated segment of the shaft) and place it just out of reach of the rest of the shaft. You want to be sure that the target is always just out of reach, since this will keep the shaft from popping if it attempts to point inward.



06 Hierarchy is important in regards to where this target shape lives. Since it defines where the piston is going to point, the target needs to be a child of the forearm and make sure you name it appropriately. Now, after the piston is rigged, the shaft will continue pointing towards the forearm when it moves or bends.



07 To get started with the actual rigging of the set-up, you'll need to create a Target Tag. In the Object Manager, select the parent object of the piston (the object from where the piston rotates) and right-click. Select Cinema 4D Tags > Target from the drop-down menu. The Target Tag tells the object it's attached, so that it should always point at a defined object.

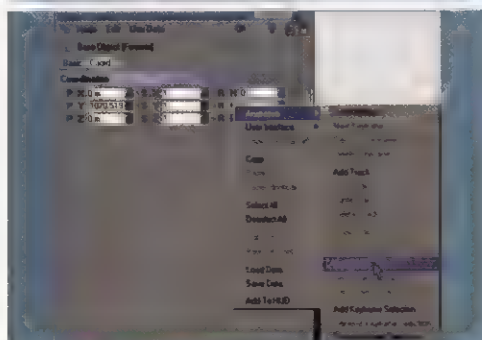


08 Define the target by clicking the Target Tag to open its attributes in the Attributes Editor. From the Objects Manager, drag the Hydraulic Shaft Target into the Target Object input field in the Attributes Editor. If all is well, the shaft may pop a bit when it snaps into place as the piston rotates around, pointing at the target.

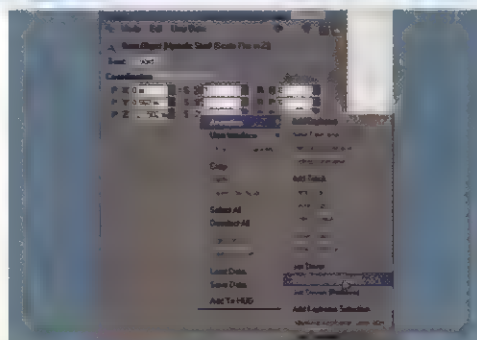


09 To have the rotation of the forearm drive the scale of the piston, we need to be clear on which angle is changing. Use the Rotate Active Element tool to begin rotating the object. Take a look in the Coordinates Manager to find out which value is changing. In the sample file included on the CD, it's the B (Bank) angle that will be doing the driving.

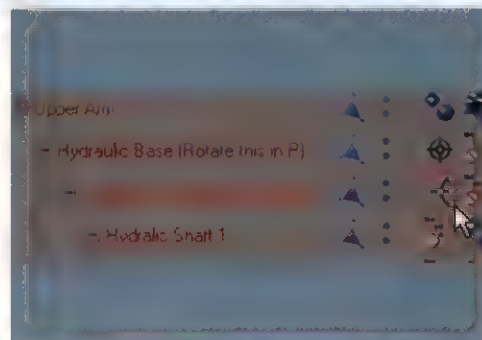
STAGE THREE | Setting up the rigging



10 Now that you know which element will be changing when you rotate the arm, we can set this attribute as the Driver. Select the forearm in the Objects Manager. Now, in the Coordinates tab of the Attributes Editor, right-click on the B and select Animation > Set Driver from the drop-down menu. C4D now waits for you to define what this element is to drive.

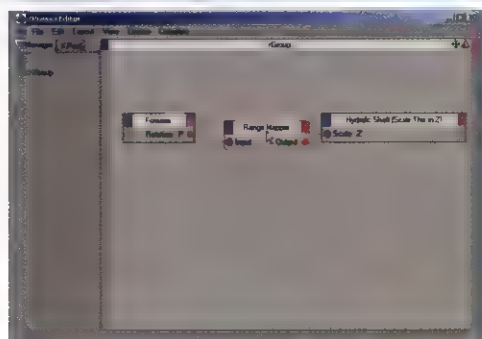


11 In this case, the Z scale of the piston will be the changing scale element. Just select the piston shaft (the parent part, though not the mount) and look at which manipulator handle is aimed down the shaft. With the element selected, go to the Attributes Editor in the Coordinates tab, right-click on the Z element and select Animation > Set Driven (Absolute).

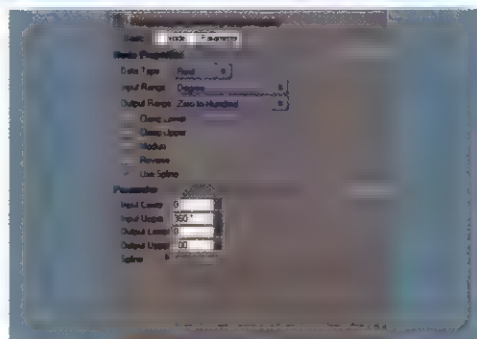


12 After the Driver and Driven are set, you'll notice that a new tag appears in the Object Manager next to the object being driven. This is an XPresso tag and indicates that expressions have been created that manipulate the object. This is where the rest of the piston battle is won, so double-click this tag to open the XPresso Editor.

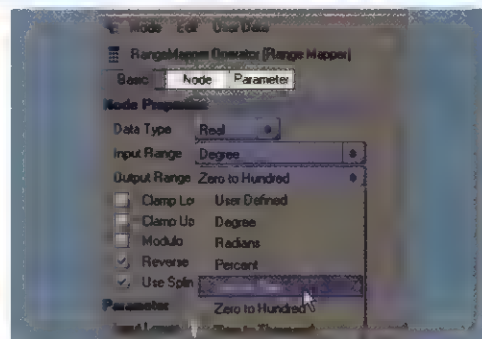
STAGE FOUR | The XPresso Bar



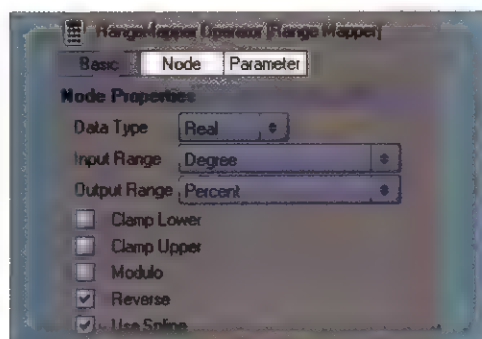
13 When you double-click the XPresso tag in the Objects Manager, a new window will open with several floating boxes in it. Notice the Forearm and the Hydraulic Shaft, with outputs and inputs defined. You can see the Rotation in B as the Forearm is driving the Scale in Z of the Hydraulic Shaft, but only through the Range Mapper.



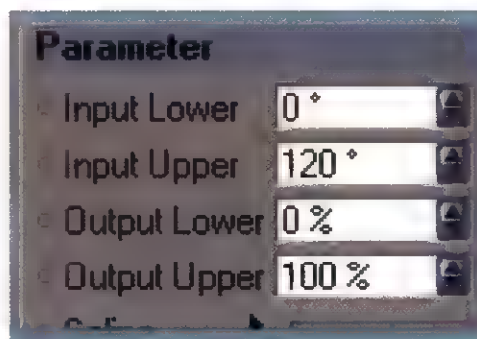
14 The Range Mapper is where we can work out the difficulties of dealing with the angles of one object driving the scale of another. To define this, double-click the Range Mapper node in the XPresso Editor. This will open the Range Mapper in the Attributes Editor, where a whole slew of important settings await.



15 You'll notice that, by default, the hydraulics have probably shrivelled up into nothing. This is because the starting angle of the forearm is 0, so the scale of the shaft is 0. Start by activating the Reverse option. This will revert things back to normal, where you can start defining relationships.



16 Define what form of the Input (the Driver) is going to drive what form of the Output (the Driven). Set the Input to Degrees, because we're talking of rotation of the forearm, and set the Output to Percent. This allows C4D to understand that the number of degrees the forearm rotates will control a percentage of the scale of the shaft.



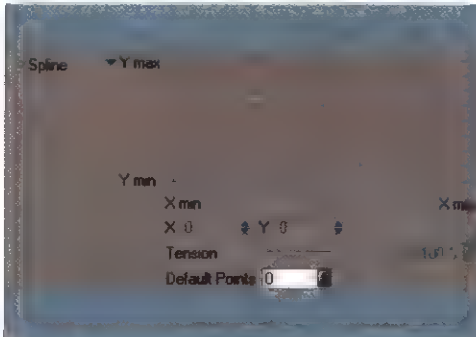
17 Further refine the input and output settings in the section below by defining how many degrees are used in the driven calculation and what percentage of scale will be allowed. When the forearm is rotated to 120 degrees, the piston would have to be collapsed, so this makes a good Input Upper value. The Output Upper and Lower values should be from 0 to 100 per cent.



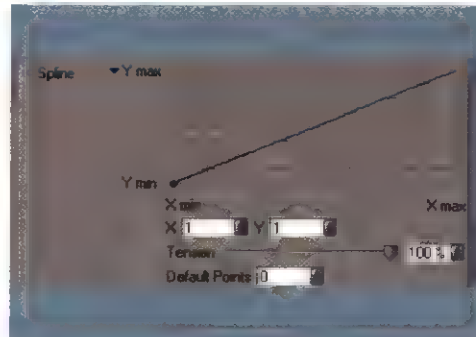
18 The assumption that the Range Mapper makes is that the relationships are linear (as the arm rotates half way, the shaft will be half the size). Unfortunately, the relationship is much more complicated. Notice that the shaft will be the right size when the arm is completely extended and completely bent (at 120 degrees), but will look wrong for most of the time in between.



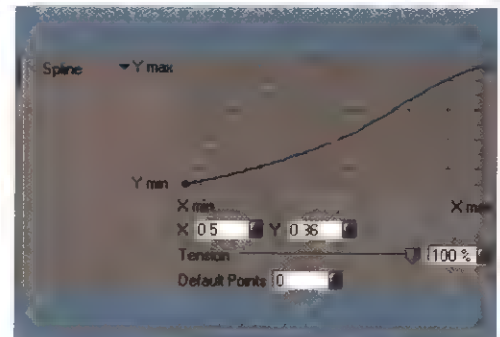
STAGE FOUR (cont.) The Xpresso Bar



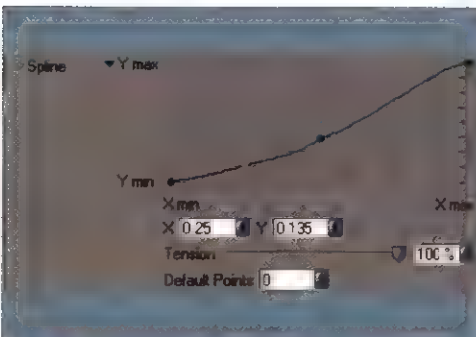
19 The solution is to use the already-activated Use Spline option of the Range Mapper. This will enable us to use a curvilinear spline to define the relationship. The Spline Editor is at the bottom of the Attributes Editor for the Range Mapper and is empty by default. By placing points along this editor, we can more accurately define the relationship.



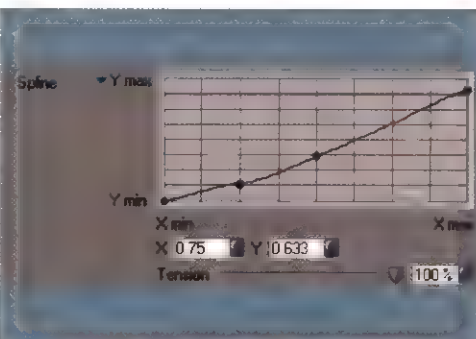
20 You should start by establishing a simple linear relationship. Click on the bottom corner of the graph. This will create a straight line with two points. Take the second point at the X Max end of the graph and drag it up so that it sits at the top-right corner of the graph.



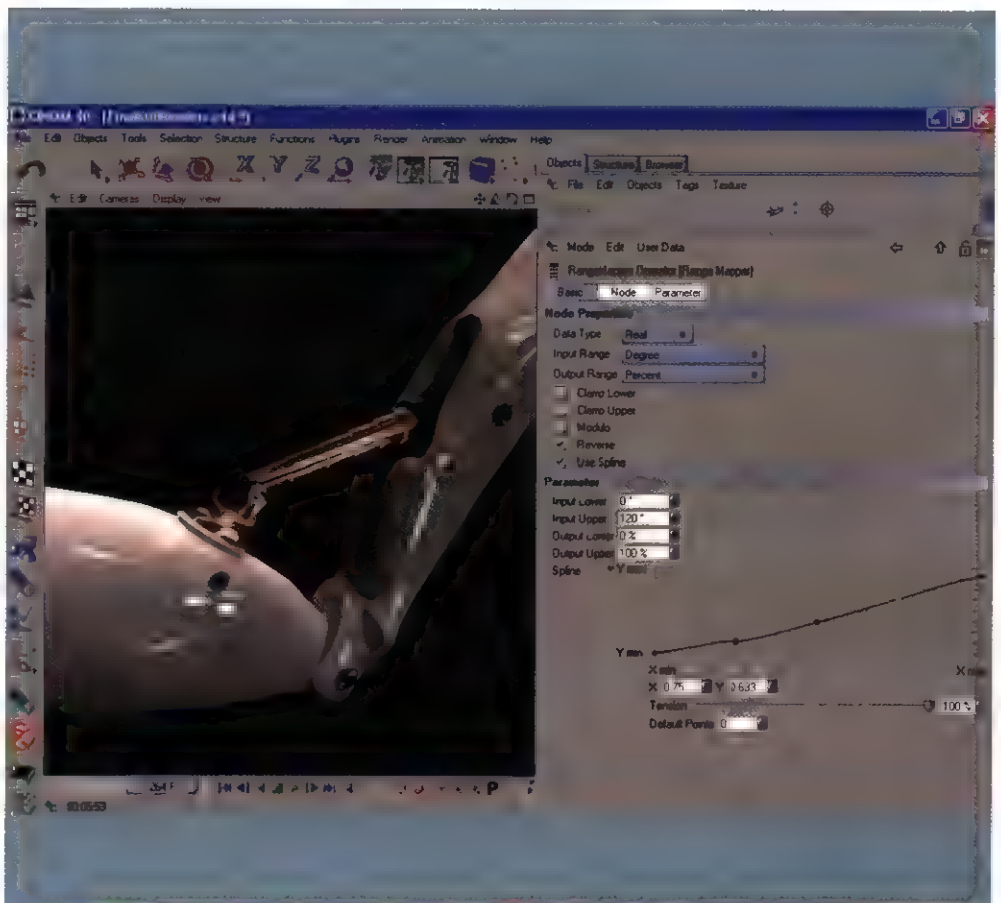
21 Rotate the forearm to 60 degrees to get a visual. In the Range Mapper (you may need to open it again from the Xpresso Editor), click on the line in the Spline Graph at about the halfway point (you can refine this in the input field below it). Slide the new point up and down until you can see the piston at the correct length in the Editor window.



22 Now rotate the forearm to 30 degrees and create another new point in the Spline Graph at about a fourth of the way in X (refine to X=.25 in the input fields below). Again, slide the point up and down until, visually, the piston is the right length for that point in rotation. For this example, the Y value is 0.135.



23 For one final refinement, rotate the forearm to 90 degrees (about three quarters of the total rotation allowed for the arm) and place a point in the Spline graph at X=0.75. Shift the new point up so that the piston is in place visually in the Editor window. You could further refine these settings, and may need to depending on your scene, but these four points will usually be plenty.



24 When the Spline Graph is properly defined, simply grabbing and rotating the forearm will result in a seamlessly scaling piston. Notice that there are some other interesting aspects to the Spline Graph (including Tension) that can further empower this tool.

With these features, you can develop feet that leave a toe flat until the heel rotates past a certain point, or even set

up a piston that slides along the two limbs it joins. The possibilities are almost endless. Although this sort of process can seem daunting at first - after all, expressions aren't usually a 3D artist's cup of tea - taking control of the Xpresso Editor and understanding the Range Mapper can dramatically increase your power and potential as a rigger in Cinema 4D. ●

Q&A

Our experts this month ...

3DS MAX

Pete Draper is the VFX Director at Lightworx, Bristol. He's still wanted by the government and is surviving as a soldier of fortune (cue theme tune...) www.xenomorphix.co.uk

AFTER EFFECTS

Christopher Kenworthy is now working on various books, TV shows and films as writer, director and VFX artist <http://homepage.mac.com/thoughtfox>

BLENDER

Bassam Kurdali is a character animator and 3D addict who sometimes doubles as an electrical engineer www.slikdigit.com

BRYCE

Kirk Dunne is a freelance artist, and has served as Renderosity's Bryce Moderator for the past three years www.agentsmith.tk

LIGHTWAVE

Benjamin Smith's clusters are killing him, but he doesn't have the time to visit a doctor www.redstarstudio.co.uk

MAYA

Gary Noden, Head of 3D at 422, has in fact been called Flubber, but a Sumo wrestle to the floor put paid to any further insults www.422Manchester.co.uk

MESSIAH

Joe Cosman is a CG artist from Utah, USA. He develops the *Learn: Messiah* training materials, available through his website www.joecosman.com

XSI

Ola Madsen works as a 3D artist for a company in Sweden, animating everything from medical treatments to cute teddy bears www.digitalcontext.se

ZBRUSH

Alan Southern is a freelance artist/sculptor specialising in *ZBrush* and *Silo*. He's been part of the *ZBrush* beta team for four years www.southernfx.co.uk

Quick Questions

No matter which 3D software package you use, our experts are here to help. Send us your query and we'll provide the solution: <http://forum.3dworldmag.com>



ON THE CD

● Scene files and screenshots for all the Q&As
PAGE 123

Image-based lighting effects, as demonstrated in this eye-catching Bryce render, can offer a highly effective alternative to normal light settings.

DRYCE 5 | Fake image-based lighting

Q Is it in any way possible to illuminate a Bryce scene without using lights and with just an image? And if so, is there a way to do this without incurring marathon render times?

JEFF, VIA EMAIL

A This is an advanced version of issue 64's Bryce Q&A on creating fake HDRI renders. While the initial procedure is basically the same, the material settings are going to be very different. As with the faked HDRI, Bryce also needs a workaround to simulate an image-based lighting set-up.

Normally, to use just an image to illuminate a scene, we'd use Bryce's True Ambience render feature, but as this adds rendering time, and higher Ray Per Pixel settings are needed to reduce grain (which multiplies rendering time), we'll attempt to use just material settings to simulate the effect we need.

Start Bryce and, in the Sky Lab, choose the Simple White Background preset. Disable and turn off every option, including the sun itself. What will eventually light the scene is an image wrapped around a Boolean sphere, which will encompass your scene.

Create a default sphere and make its attributes positive. Duplicate this sphere and make its attributes negative. Resize it slightly smaller and then group the two spheres together. Resize that Booleaned group to about 1,000 units on all axes.

To this sphere group, apply an image texture. In the Materials Lab, set your mapping mode to Spherical (or whatever is needed) and set the Material Options to Normal. Your Diffusion should be set to 100 and your Ambience to about 75-100. All other settings will be at zero. Additionally, in the A Channel, place markers beside Transparent and Transparency.

The materials that you apply to your objects within the scene will have one basic thing in common: most materials will need an Ambience value of about 100. You'll need to exercise finer control over the settings, as small changes can have a dramatic effect in these scenes, but no special rendering options will be needed.

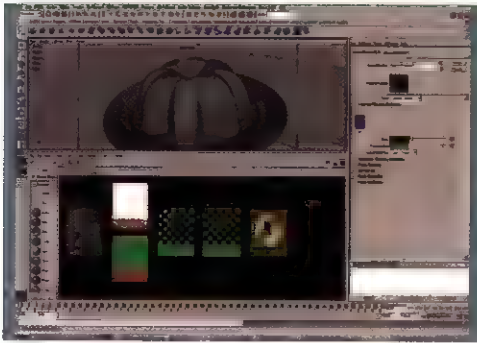
Use the completed scene file on this issue's CD as your template for these kinds of scenes. Take note of the settings of the various materials. Both image and DTE textures have been included for your use. **[KD]**



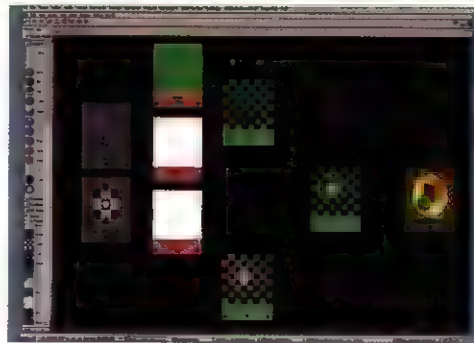
● Screenshots showing the lighting and materials settings for this Q&A can be found on the CD. Each of the versions on the disc is annotated to provide extra tips and discuss important technical issues in more detail.

MAYA | How can I create a realistic material set-up for a render of a jelly?

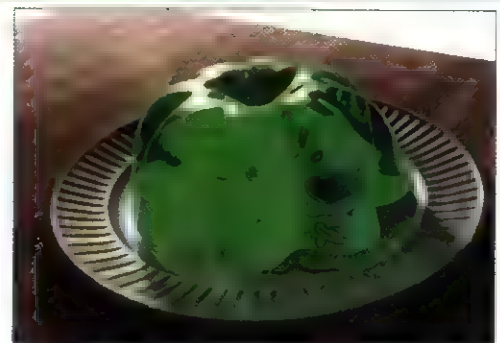
TANKUT, VIA THE FORUMS



01 Create a layered shader
Jelly is a little refractive and reflective, but not really shiny, so a layered shader is the best way to control these elements. Open *Jelly1.mb* (from the CD) and create a layered shader for the jelly objects. Add a new Phong material to it, deleting the green layer. Set the Phong's colour to dark green. Connect a Colour Ramp to its Transparency, removing the middle colour and making the top dark green and the bottom light green.



02 Tweak the colours
Set the Specular colour to black, removing its highlights. Create a samplerInfo node and connect its Facing Ratio into the uCoord and the vCoord of the Colour ramp, then select the ramp. In the Hypershade, click on Edit > Duplicate > With Connections to Network, in order to create a copy. Make its two colours white, making the top value 1.5 and the bottom value 1.1. Connect this ramp's outAlpha to the Phong's Refractive Index.



03 Final effects
Create a Blinn. Drag this on to the layered shader, positioning it on top. Make it transparent. Adjust its Eccentricity and Rolloff, setting its Specular colour to a pale yellow. Connect an Environment Map into the Reflective Colour. As in Step 2, duplicate the Phong's White Ramp, and make it dark grey at the top and white at the bottom. Plug it into the Reflectivity and add a little bump mapping. [GN]

LIGHTWAVE | Faking Maya clusters

Q I'm doing some facial mo-cap in *Maya* and the way I want to do it requires clusters. How do I make clusters in *LightWave* and what are they called?

PLEMON, VIA THE FORUMS

A Clusters are features of *Maya* and *Softimage|XSI* that enable you to select a group of points in an object and give them a handle, thus creating a cluster out of them. By moving the handle, you move the whole group of points. The cluster's effect can also be weighted, so points can be only partly affected by the movement of the handle.

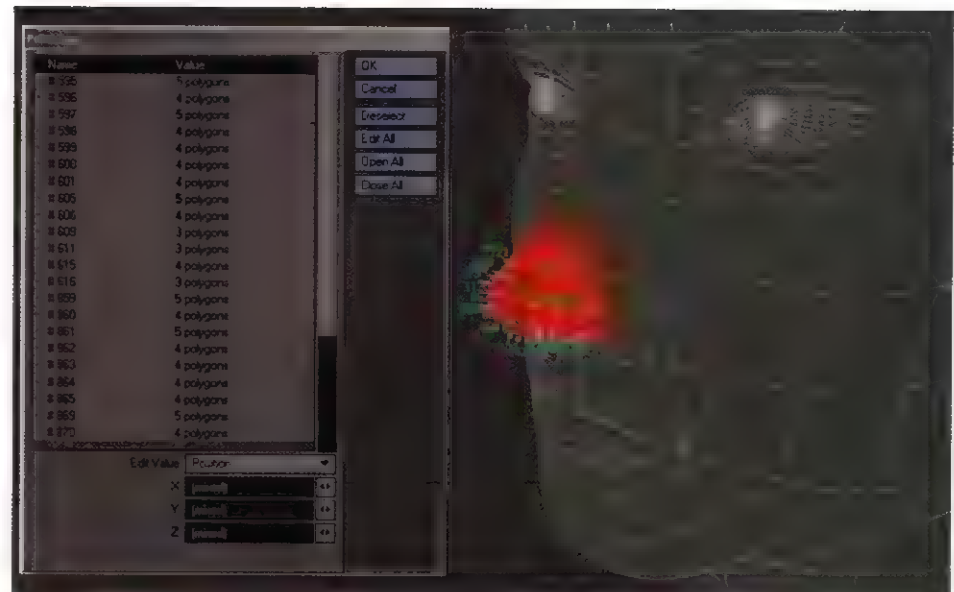
LightWave doesn't have clusters in quite the same fashion, but you can reproduce the effect in a number of different ways. To define which points make up the cluster, use Modeler to create a Weight Map that includes the points you want. If you need to create Soft Weighting around your Weight Map, one way is to select the points and press [J] to invoke the Info panel. Here you can see a list of all the points, and you can expand their

DEFINE POINTS THAT MAKE UP THE CLUSTER WITH MODELER

details to view precise weight values. You can change these numerically and see this reflected in a weight-shaded viewport.

Back in Layout, you can use the *SockMonkey* plug-in to animate the cluster. Apply *SockMonkey* as a Displacement plug-in on the Deform tab of the Object Properties panel. In its controls, hit the Auto Setup Object button to automatically add a Control object for each Weight Map. If you have other weights, you may need to delete any spurious relationships, or create them by hand. The plug-in will add a handle that you can use to move the selected group of points around. If the handle isn't automatically in a useful place, use the Edit Rest Position tool to move it to a more logical location before animating.

If you're also using bones in your set-up, you may find *SockMonkey*'s deformations clash with the bone effect. In these cases, it's better to add another bone to your character and let the bone use the Weight Map you've created. [BS]

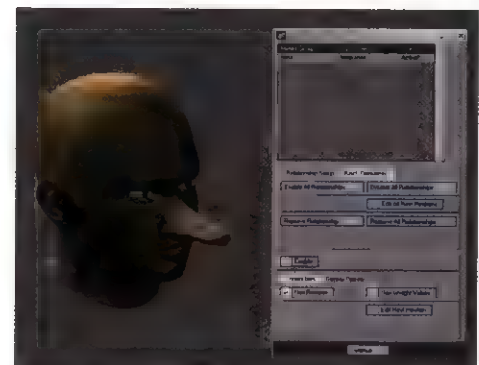


Q&A TIP

● *SockMonkey* can also work with Point Selection sets you've created in Modeler, but since these can't be weighted, it's usually better to use Weight Maps

● Use Modeler's Information panel to precisely control the weighting of points

● Apply the *SockMonkey* plug-in and run its Auto Setup mode to add cluster-like handles



BLENDER & YAFRAY | Rendering caustics



How do I create realistic reflective or refractive caustic effects in YafRay?

RUI CAMPOS, VIA THE FORUMS



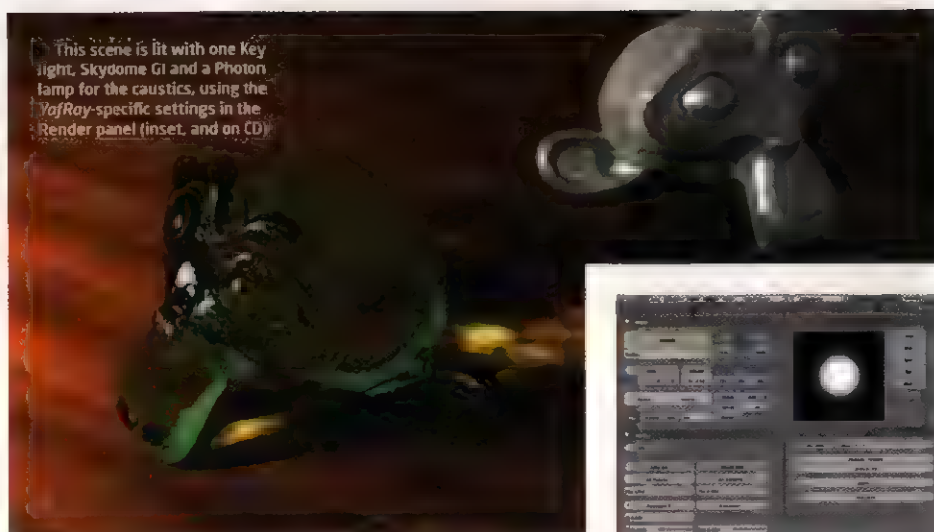
In issue 67, we did a Q&A on fake caustics with the Blender renderer. This time, we'll use the external render engine YafRay to make realistic caustics from Blender. First, you need to download the YafRay renderer from www.yafaray.org and follow the installation instructions. Once you've done this, you can use YafRay from within Blender.

Enable YafRay in the drop-down menu under the big Render button. The default is Blender Internal in the Render buttons. New options will appear in the Rendering, Materials, Camera and Light buttons.

As we saw with fake caustics, we need a lamp to generate the caustics. This time, we'll use a Photon lamp. Place it roughly in the same location as the Key lamp, aiming at the refractive and/or reflective object. You can use Copy Location and Track To constraints here, too. The Photon lamp is a new lamp type that's specific to YafRay. All this lamp does is render caustic effects, hence the need for another lamp to light the scene. Blender gives you some options to tweak here.

- **Photons:** The number of photons used to create caustics. More photons means more detail and longer renders. Start low and go up for better quality.
- **Search:** Affects the number of photons to be blurred.
- **Blur:** Affects the amount of blur. Without blur, and with fewer photons, the caustics appear as individual dots.
- **Depth:** Increases the number of bounces for the photons, and also increases the render times.
- **Angle:** This should be set to include just the transparent or reflective object to generate caustics. The smaller the angle, the more photons actually hit the object and the more efficient the render is.

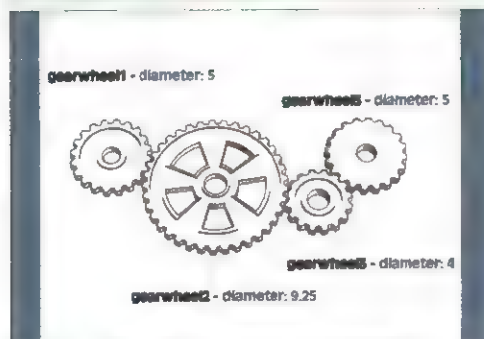
In the Material buttons, select one of the Glass presets for the transparent object. You need Transparency for Refractive caustics and Mirror Reflection for Reflective caustics, or both. You also need an object, such as a ground plane, to show the caustics. Finally, hit the Render button and wait. The example file on this issue's CD has multiple YafRay-specific options. [BK]



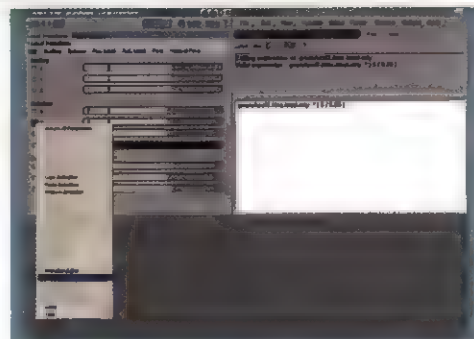
● The test scene, shown in the 3D Viewport. For more details, refer to the files on the CD

SOFTIMAGE XSI | What's the easiest way to animate a large set of rotating gearwheels?

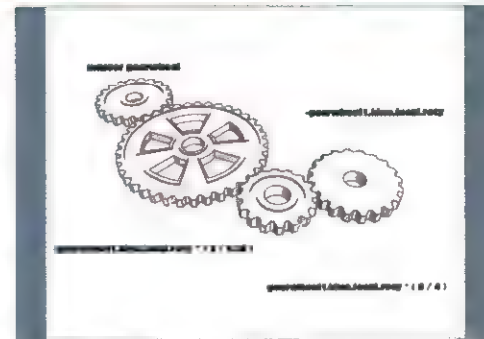
CHRISTY J, VIA EMAIL



01 **Trigonometry**
While this solution could expand to form a complex set-up based on the rules of trigonometry, doing the initial calculations by hand will save time. As there's a fixed relationship between the rotation of the gearwheels and their diameter, it's a case of linking each wheel to a master wheel, compensating for the differences in circumference and using the master to control rotation and speed.



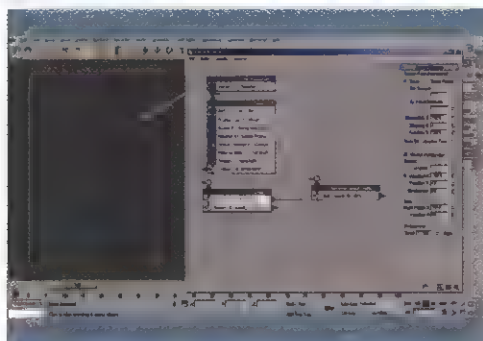
02 **Set the expression**
Open gearwheel.scn, select the gearwheel2 and press [CTRL]+[k] to open its Transform Property editor. Under the Rotation section, right-click on the Animation icon (the green dot) next to the Y axis and click on the Expression editor in the menu. In the Editing Pane, enter `-gearwheel1.kine.local.rot * (5 / 9.25)`. Click Validate to ensure you've typed the expression correctly.



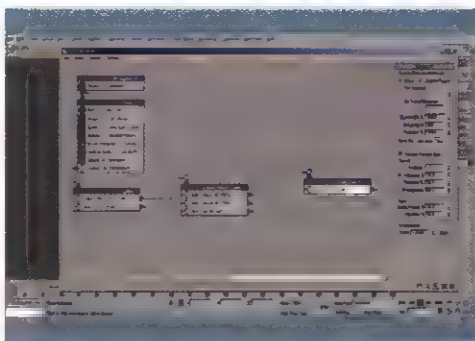
03 **Gear up**
The minus sign in the expression will make the gearwheel turn in the opposite direction to the master wheel, while numbers in parenthesis compensate for different sizes by dividing the diameter of the gearwheel1 by the diameter of the current gearwheel. Select the master wheel and rotate along the Y axis to check the functionality. Continue by adding expressions to the other gears. [OM]

3DS MAX | How can I create bullet impacts in dirt like you see in TV shows?

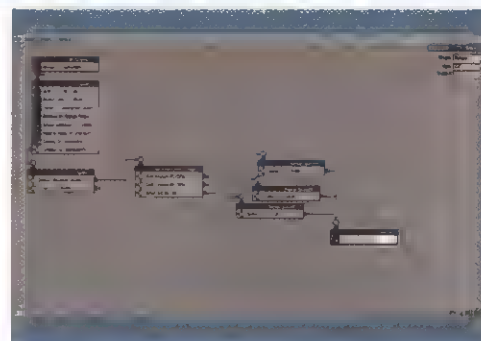
MIKE KEATS, VIA EMAIL



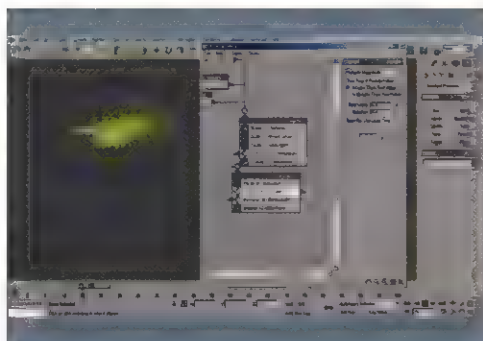
01 Begin the effect
Open the `bullet_impacts_start.max` scene file. At frame 0, add a **Spawn** test to the **Splitter** event and label it 'Spawn Reverse'. Set the # Offspring to 4 with 100 Variation and -100 Speed Inheritance. Copy it, rename and set Inherited Speed to 100. Add a **Split Amount** test to the canvas, label the event 'Reverse Speed Splitter' and wire as shown.



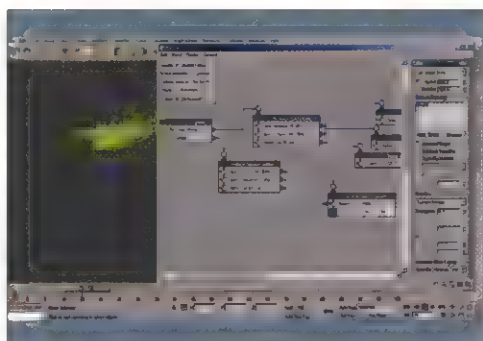
02 Vary the debris
Add another **Split Amount** test and set the Ratio to 75. Add a **Send Out** test to catch the remaining particles. Add a **Spawn** test to the canvas and label it 'Debris Speed'. Enable **Delete Parent** and set the Offspring to 200 with 100 Variation. Inherited Speed to 15 with 50 Variation and 60 Divergence, Scale Factor to 25% and Variation to 50%.



03 Add extra dirt
Copy this event another two times and amend the Offspring of the first to 150, Inherited Speed to 10, Divergence to 25 and Scale Factor to 50. For the second copy, set the Offspring to 100, Inherited Speed to 5, Divergence to 15 and Scale Factor to 50. Wire as illustrated. Create a new event with a **Shape** operator (size 3) and label as 'Debris'.



04 The influence of gravity
Add a **Scale** operator to inherit the existing set scale values by setting the Type to **Inherit Once**, and by setting the Scale Factor to 200 with 100 Variation. Add a **Force** operator and add the existing **Gravity Space Warp** to it. Instance the **Collision** test from the first event to this new event. Instance the entire **Debris** event and wire as illustrated. Add a **Speed Test** to the new **Debris** event and set the Test Value to 6 to check for (virtually) unmoving particles.



05 Kill your speed!
Create a new event called 'Speed Killer' with a **Speed** operator, set its value to 0 and wire as shown. Instance the **Debris Splitter** events; rename and wire. Create a new event with a **Spawn** test and label the event 'Vertical Debris Speed'. Enable **Delete Parent**. Set the Offspring to 40 with 100 Variation, and Scale Factor to 50 with 25 Variation.



Q&A TIP

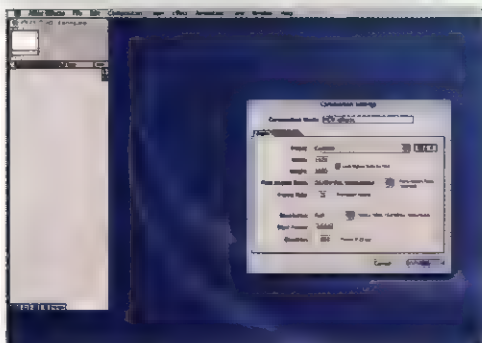
● To add extra randomness, try duplicating the three **Debris Spawning** events and amending the settings to produce a 180-degree emission of debris, as illustrated in the render and final scene

06 Finish it all off
Add a **Speed by Surface** operator to the event and set its Speed to 600 with 300 Variation. Add the **Box** object to the operator to get the particles to eject in the direction of the box's Surface Normals with a Divergence of 5. Add a **Send Out** event and wire as illustrated in the screenshot on the CD. Copy the event another two times and

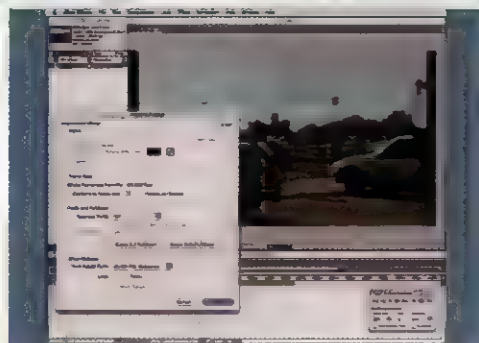
wire as illustrated. Set the first new copy's Offspring to 30 with a Scale Factor of 100, and in its **SBS** operator, set the Speed to 500 with 250 Variation. In the second copy, set the Offspring to 20 with a Scale Factor of 150. In the **SBS** operator, set the Speed to 300 with a Variation of 150 and wire as before. If you get stuck, refer to the files on the CD. The disc also includes a movie of the finished effect. [PD]

AFTER EFFECTS | How can I work with HDV in 16:9 aspect ratio without loss of quality?

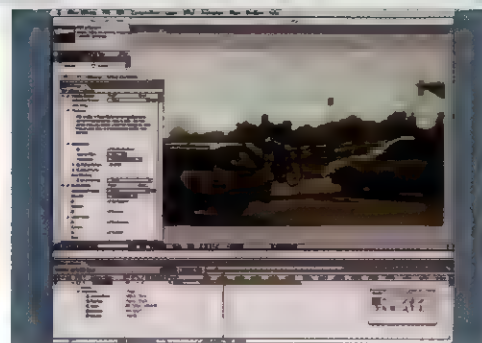
DAVID CLARKE, VIA EMAIL



01 Create a new composition
HDV is a breakthrough format, but unless you get all your settings right, you can find yourself working with a stretched image. When you export, resolution loss and interlacing artifacts are common. To get around this, create a new composition and use the preset for HDV (1,920x1,080). Set Pixel Aspect Ratio to D1/DV PAL Widescreen, and Frame Rate to 25. Lock aspect ratio to 16:9 and set your desired duration.



02 Alter the aspect ratio
If you import your HDV clip and drag it to the timeline, the aspect ratio will be wrong. Instead, select the clip and go to File > Interpret Footage > Main. The Frame Rate should be 25 and Separate Fields should be Off. Most importantly, set Pixel Aspect Ratio to DV/D1 PAL. Now you can safely drag your clip to the timeline.



03 Edit your clip
You can work with your freshly imported HDV clip in true 16:9 aspect ratio without affecting the compression or quality of the clip. Simply repeat the process for other clips. When applying filters that require information about field levels, such as Magic Bullet, you should set Upper Field First, even if you're using PAL. [OK]

ZBRUSH | Creating a low-polygon cage

Can I use ZBrush to make a low-polygon character instead of using a third party program?

SIMON EKIN, VIA EMAIL

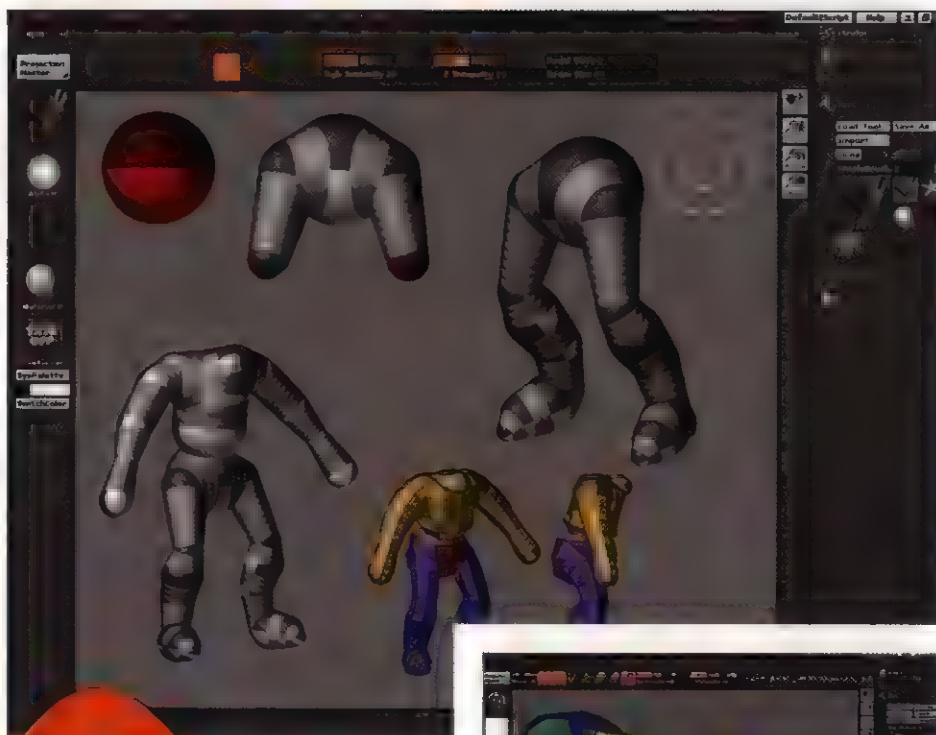
Some modellers create low-polygon cages to use as a base mesh in ZBrush. They then incrementally increase the subdivision levels into the millions of polygons and add incredible detail. However, you can use ZBrush to create the low-polygon cage without leaving the program. To do this, you need to create a ZSphere mesh. Go to Tools > ZSphere and draw out a ZSphere in the centre of the canvas. Press [t] to enter Edit mode. Switch on Symmetry across the X axis using Transform > Symmetry > X. This will enable you to create both sides of the model at once.

Imagine the starting ZSphere to be the hips of your character and add ZSpheres at either side to form the thighs,

CREATE A ZSPHERE MESH AND CONVERT IT TO A POLYGONAL MODEL USING 'CREATE ADAPTIVE SKIN'

then more to form the calves and feet. Switch from Draw to Move in the top panel and adjust the shape of the model. Use a Draw Size of 1 to move a single ZSphere. Add more ZSpheres to form the upper body, arms and fingers, then finally the neck and head. Move the ZSpheres and joint ZSpheres to get your model into a pose.

Click on Tools > Adaptive Skin and you'll see the settings you need to make the ZSphere mesh behave in the way you want it to. Take some time to adjust these to suit your needs, then hit Preview and the ZSpheres are turned into a Polygon Mesh preview. When you're happy with the look of the preview, hit Create Adaptive Skin and a new polygon model is created in the Tool panel. Draw the new one out onto the canvas, where you can tweak the points using Move. Don't forget to put Symmetry on X back on for this new model. [GS]

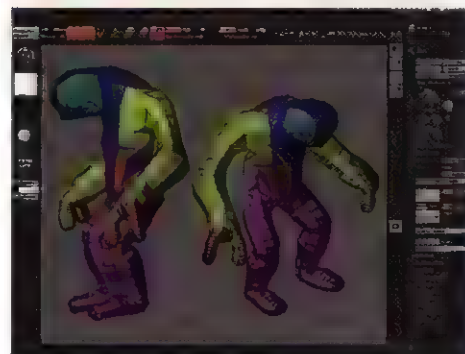


Q&A TIP

● Switch on Quick 3D Edit and Draw Polyframe from the top menu to see your preview as a flat-shaded wireframe model

● The starting point for a low-poly model created entirely in ZBrush: a ZSphere mesh...

● ...which can then be converted into polygons via Create Adaptive Skin



MESSIAH:ANIMATE | Correcting cycle problems in Compose



How can I copy the first keyframe to the last frame of a walk cycle while maintaining the correct position of the character in the world space?

SRT, VIA THE FORUMS



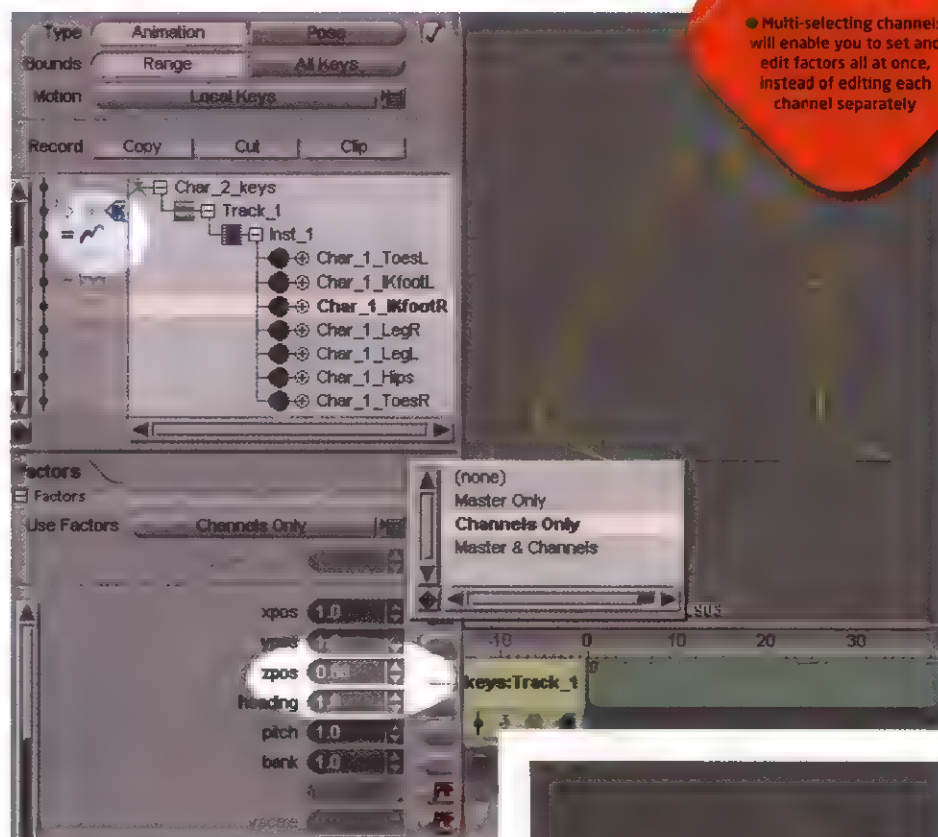
The main technique you're trying to describe here uses Messiah's Accumulate End Behaviour on a repeating clip. If the values aren't exact from beginning to end, offsets will occur during the course of the animation. In the case of the two characters in the inset image opposite, the one on the right has an excessive Z-translate on his right foot. Correcting this problem is quite simple: use factors.

Factors play a major role in generating a library of reusable cycles. They are also used in correcting scale issues from character to character by giving you a numeric way to fine-tune the intensity of each animation channel. Each one is a value that

CORRECTING THIS PROBLEM IS SIMPLE: USE FACTORS

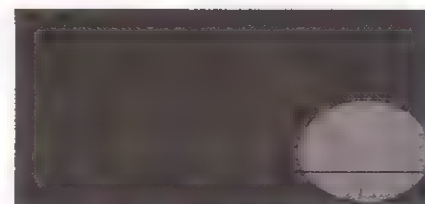
you can use to overstate (or mute) animation channels. Think of them as multipliers. A factor of 2 will double the channel's values, while a factor of 0.5 will cut them in half. You can set factors for all channels in an item, or just pick the ones you need.

The Factors block for clips can be found within the Tracks tab in Compose, and is accessible when you select a Motion channel on the clip instance. There are three options you can use: Master Only affects all Transform channels equally with the multiplier you type in; Channels Only enables you to customise the channels you want to apply the multiplier to; Master and Channels will apply both the Master multiplier and the Channel multiplier to your selected channels. This is useful for diminishing all channels before accenting the few you need. For the most part, you'll only need to adjust factors on two or three animation controls, depending on how complex your character set-up is. [X]



● The Factors block enables you to align motion clips on each channel in order to get them looping perfectly...

● ...in order to fix problems like this. After looping the cycle four times, there is a noticeable drift in position of the character's front foot



Q&A TIP

● Multi-selecting channels will enable you to set and edit factors all at once, instead of editing each channel separately

CONUNDRUM | Send us your solutions to this month's brainteaser

Each issue, we set you a real-world 3D problem to solve. The sender of the best solution wins the book or training DVD shown on the right. Our conundrum for last month was posed by 3ds Max user jonah_the_chef, who asked:

"Most people stop with the lips and teeth when lip-synching. But how do I create animation for my character's tongue?"

First into the breach was forum user mynewcat, who replied: "To create an animated tongue, you'll need to loft a tongue shape along a spline and manipulate the loft with spline IK. Create a tongue front elevation, draw another line equal to the length of your tongue, apply the spline IK modifier to the tongue length and create helpers. The helpers manipulate the spline. Loft the tongue length, and select the tongue shape as its shape."

"Next, you'll need to go into Scale Deformation to bring the tip of the tongue in a little bit - you can also add extra width to the middle section of the tongue. Meshsmooth it. You now have a controllable model. Link the first point helper to the inside of your character's mouth, and use other point helpers to animate the tongue as you see fit. And that's the conundrum licked!"

You can read the full instructions in the 3ds Max section of the forum, along with a screenshot of the model. Congratulations to mynewcat, who wins a copy of *Facial Expressions*.

However, modelling a tongue is only half the battle. We asked our Character Studio expert, Chris Ollis, who added: "This depends on your method of facial animation. If you're using morphs, the most logical solution is to include the tongue in your mesh. At the simplest level, the tongue only has three key positions when talking - the tip behind the bottom front teeth, the tip behind the top front teeth and the whole thing arching, so that the middle goes up to the top of your mouth. If you include the relevant tongue position in your morph meshes, it will all be done for you when you animate between mouth shapes. Obviously, you need to add specific morph targets if you want to blow raspberries!"

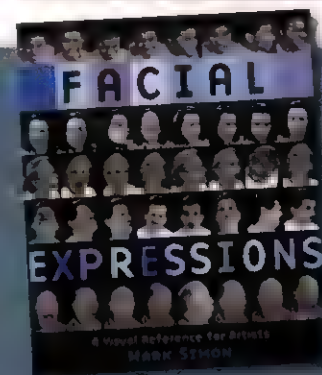
"If you're using a bone rig, you should be able to get away with just one bone lifting the tip of the tongue to the top of the mouth for all the key letters - D, J, L, N, S and T."

THIS MONTH'S QUESTION

Our question for issue 69 concerns materials and lighting in *LightWave*, and is posed by Ed, who asks:

"How do I achieve the effect of objects looking paler and more blurred the more deeply they're frozen in ice?"

You can post your solutions in the Mag Related section of the forum, or email them to us at the address on the right.



This month's prize

Send in your solution to this month's brainteaser and you could win a copy of *Facial Expressions - A Visual Reference for Artists* by Mark Simon. An invaluable aid for character animators, the book contains images of over 50 male and female models with ages ranging from 20 to 83, photographed in a variety of facial expressions and from multiple angles. For more information, visit www.watsonguptill.com

To enter, post your answers on our forum <http://forum.3dworldmag.com>

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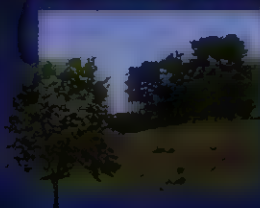
PEOPLEN**MOTION**

TRAFFIC

Low Poly Prefatured Vehicle

Alpha Map Trees & Panoramic Sky Domes for Low Polygon Count & Image Based Lighting

CONIFERS & HARDWOODS



55 Alpha Map Trees:
- Plants
- Shrubs
- Flowers
- Hedges
- Branches & Leaves

PALM TREES



55 Alpha Map Palms:
- Plants
- Shrubs
- Flowers
- Hedges
- Branches & Leaves

PANORAMAS & SKY DOMES



142 High Rez Panoramas:
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Exteriors



ST 5
Downtown
& Signs



ST 8
Absolute
Metals



ST 11
Oriental
Textures



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**City
Building
Models**



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Ultimate
Interiors



ST 6
Classic
Architectural



ST 9
Fabulous
Fabrics



**Amazing
Sci-Fi**



**Home
& Office
Furniture
Models**



**Suburban
House
Models**

Coming up || **IN ISSUE**



IN ISSUE #70

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REVIEWS

HARDWARE / SOFTWARE / BUYERS' GUIDE



THEY ALL CHOSE
POWERFUL GRAPHICS
CARDS AND DUAL
PROCESSORS, BUT
THE EXACT CHOICE OF
PROCESSORS MADE
FOR INTERESTING
BENCHMARK RESULTS



Workstations

GROUP TEST Thinking of buying a new workstation? Then take a look at five of the latest machines, each hovering in the £4,000 price bracket **BY MAT BROOMFIELD**

There have been two key advances in processor technology over the last year or so, especially in regards to powerful workstations – both doubling the amount of processing power, but in different areas of the system. Dual-core Opterons place two Opteron processors on a single chip for extra performance, while Dual SLI enables you to run two graphics cards simultaneously. One affects CPU performance (great for rendering), while the other affects GPU performance (perfect for real-time scene manipulation using OpenGL or DirectX). However, many other factors contribute to making a great workstation, and we've considered all of them.

We've assessed the amount and type of memory; the size, spindle speed and interface of hard disks; the room for expansion, and how well it has been assembled; plus the amount of cooling and the noise level generated by fans.

We spoke to a number of manufacturers and requested workstations targeted specifically at the 3D and CAD/CAM market.

We specified a £4,200 (including VAT) cut-off point, but due to technical problems with its first-choice machine, Hewlett-Packard (HP) had to submit a replacement that exceeded our price restriction. We asked each manufacturer to decide which of the key components within the system they considered the most important; this enabled them to build their systems according to their individual experience of customer requirements. They all chose a powerful

graphics cards and dual processors, but the exact choice of processors made for some interesting benchmark results.

All the systems here include 64-bit processors,

increasing the maximum capacity for each motherboard. With this in mind, it's important to check how the existing memory is provided: if the system only has four memory slots, it's not wise to provide four 1GB memory sticks, as it closes down a critical avenue of expansion.

We opened the systems up, rummaged around inside and performed a series of benchmarks, but we also tested the machines with *3ds Max 7* to see how they performed with real-world applications. Read on to find out the results.

THERE HAVE BEEN TWO KEY ADVANCES, BOTH DOUBLING PROCESSING POWER

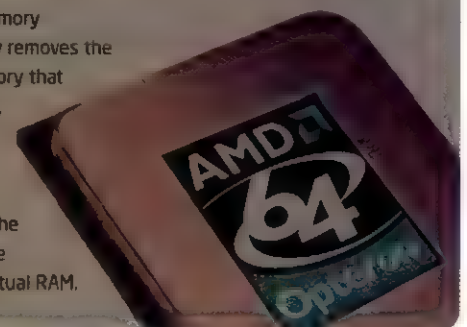
TALKING POINT | The 64-bit connection

ALL OF THE systems in our group test offer 64-bit capability. The AMD processors are 64-bit from top to bottom, and this provides a far greater performance increase – the CPU can execute more complex instructions in a single operation.

Even the Xeons incorporate what's known as EMT (extended memory technology). While the main processors are still 32-bit, they now have the

capability to use 64-bit memory addressing. This essentially removes the cap on the amount of memory that the processors can address, enabling motherboards to carry far more.

Of course, the more memory your system has, the more data it can hold before using your hard disks as virtual RAM.



● On test this issue (left to right): Dell's Precision 670, HP's PH553AV, Alienware's Mj-12 7550a, RM's Xeon Workstation and Armari's Gravistar XR

DETAILS

PRICE
£4,113 / \$7,230* / €5,958*

*Currency conversion
(includes VAT)

PLATFORM
Windows XP Pro

MAIN FEATURES
• 2x Intel Xeon 3.6GHz processors
• ATI FireGL V7100 graphics card with 256MB RAM
• 4GB DDR2 memory

MANUFACTURER
Research Machines

WEBSITE
www.rmt.co.uk



DETAILS

PRICE
£4,442 / \$7,812* / €6,436*

*Currency conversion
(includes VAT)

PLATFORM
Windows XP Pro

MAIN FEATURES
• 2x AMD Opteron 2.4GHz processors
• Nvidia Quadro FX 3400 graphics card
• 8GB PC3200 RAM

MANUFACTURER
Hewlett-Packard

WEBSITE
www.hp.co.uk



RM Xeon Workstation

If you're a loyal Intel user, this system from Research Machines is the fastest Intel PC in our round-up

HP PH553AV

When you need global dependability, HP has the presence to support you, but at what cost?



Until recently, the Xeon was the fastest PC processor you could buy. The 64-bit Itaniums are

more powerful, but they're targeted at the server market. Now, the Xeon has been exceeded by dual-core Opteron processors from AMD – but a few applications are still only guaranteed to work under Intel CPUs, and many people simply prefer Intel.

This machine includes dual 3.6GHz Xeon processors. These offer 64-bit memory addressing that enables the processor to access more memory than ever before. This system comes with 4GB, but the memory has been provided as 4x 1GB sticks, which uses all the slots on the motherboard. More slots would have helped, or higher-capacity memory sticks. We weren't impressed with the configuration in other areas, too: it only has four USB ports, for instance.

Another useful processor feature is Hyper-Threading technology, which enables the processors to operate as two virtual CPUs, providing between 10 and 25 per cent more performance. However, as the Sandra benchmarks demonstrate, this is nothing compared to the dual-core

AMD design, which provides twice the CPU performance of this system.

The Xeon includes a 256MB ATI FireGL V7100 graphics card, and whether you judge it by its DirectX or OpenGL performance, it comes out as a clear group winner. With two 10,000rpm SATA hard disks striped together via RAID 0, the system also offers massive sustained transfer rates, so it's good for video work. However, more hard disk capacity would have helped. Many capture solutions also depend on FireWire for video capture, but, like the HP system, this unit doesn't include FireWire ports as standard.

The Xeon is a reasonably priced system, but surely a price tag of £4,113 justifies a longer warranty than a year?

VERDICT

PROS

- Fast graphics
- Fast memory
- Fast hard disks

CONS

- Processors superseded

RANGE OF FEATURES	7
VALUE FOR MONEY	7
OVERALL	7



If you're spending over £4,000 on a workstation, you can't afford long periods of downtime if

something goes wrong. HP is the only company in our round-up that offers a worldwide on-site warranty. The only thing is, you're probably not going to be taking your system 'worldwide'!

Eliminate this unique feature from the equation and HP's system looks distinctly overpriced and under-specified. True, it was put together at the last second to replace another HP machine that didn't materialise, but it's a standard model that should compete with other workstations in its market sector.

At its heart lies two single-core 2.4GHz Opteron processors. Although these are 64-bit processors, the system only ships with a 32-bit version of XP Pro, missing out on some of the benefits offered by the new 64-bit version, especially now that many 3D applications are available in 64-bit versions.

Like the Xeon processors, AMD's single-core Opterons provide what would have been group-leading performance in tests six months ago. Today, they're superseded by dual-core versions from

the same manufacturer. This wouldn't be so bad were this system suitably cheaper, but it's the priciest machine on test.

In terms of graphics performance, the HP PH553AV shares the same Nvidia Quadro FX 3400 as the Dell machine, placing it at the bottom end of the performance table. However, even though it has the same card as the Dell, it outperforms it enough to make a difference. This could be down to the memory or the motherboard.

The system comes with two fast 15,000rpm hard disks, and these can be made even faster using the onboard RAID. It's a good workstation for broadcast video editing, but it falls behind the competition in most other areas.

VERDICT

PROS

- Lots of memory
- Extremely fast storage
- Global warranty

CONS

- The most expensive here
- Processors superseded

RANGE OF FEATURES	7
VALUE FOR MONEY	6
OVERALL	6



DETAILS

PRICE
£4,029 / \$7,069* / €5,842*
*Currency conversion
(includes VAT)

PLATFORM
Windows XP Pro

MAIN FEATURES
• 2x Intel Xeon 3.6GHz processors
• Nvidia Quadro FX 3400 graphics card
• Both SCSI and SATA hard disks

MANUFACTURER
Dell

WEBSITE
www.dell.co.uk



DETAILS

PRICE
£3,989 / \$7,018* / €5,777*
*Currency conversion
(includes VAT)

PLATFORM
Windows XP 64-bit

MAIN FEATURES
• 2x AMD Opteron 2.75GHz processors
• ATI FireGL V7100 graphics card
• Removable drive case

MANUFACTURER
Armari

WEBSITE
www.armari.co.uk



Dell Precision 670

With so much competition, it no longer makes sense to charge for your name, so what else can Dell offer?



Dell is renowned for creating beautiful systems that contain bespoke components.

This makes for aesthetically pleasing and stable machines, but they tend to lack in high-power performance.

This system is a classic case in point: it features dual Xeon CPUs running at 3.6GHz and, as we've already pointed out, the dual-core Opterons leave these in the dirt. However, they ought to at least offer comparable performance to other systems with the same processor configuration. Sadly, this isn't the case. Compare the Precision's Sandra benchmark numbers against those of the RM system and this comes up 10 per cent slower – even more in the real-world 3ds Max rendering tests.

It doesn't stop there, though. The graphics card – a capable Quadro FX 3400 – also manages to perform worse than the identical card in the HP system, in some cases by a massive margin.

Is it the fact that the Dell system only comes with a measly 2GB of RAM? This may well have an effect, but none of our tests are working the memory too hard. It's possible that while Dell invests a lot of effort in its hardware, the software side

of things suffers. You can download the latest graphics card drivers and update the motherboard bios, and also install the latest drivers for the drive controllers, but should you have to?

This machine includes a thoughtfully designed drive subsystem, consisting of not one, but three hard disks: an 80GB SATA boot disk and two 10K 73GB SCSI drives configured via RAID 0 to give excellent performance as a working storage area. This is an appealing design, highlighting the fact that the same attention to detail isn't reflected throughout all areas of the system.

A powerful workstation, but it comes bottom of the pile in every performance benchmark. Not great value for money.

VERDICT

PROS

- Well constructed
- Good warranty
- Fast hard disks

CONS

- Processors superseded
- Inadequate RAM

RANGE OF FEATURES	7
VALUE FOR MONEY	5
OVERALL	6

Armari Gravistar XR

Dual-core Opteron is the latest Intel-bruising innovation from AMD, but how good is it?



This system is one of two in our group test that's based on the new dual-core Opteron processor.

The idea is simple yet effective: include two entire Opteron CPUs on a single chip with a memory bridge between them. They work in harmony to offer increased performance.

This was a logical response to Intel's Hyper-Threading technology, which enables applications to utilise a CPU's excess processing power. While Hyper-Threading provides two virtual processors per chip, it yields a modest performance gain. AMD's design doubles performance. Each CPU only takes up a single socket, so you can put two into a dual-CPU motherboard, giving yourself four CPUs! Your software must be multi-processor capable to take full advantage of this.

The Gravistar provides the fastest processing performance in our tests. However, it includes a FireGL V7100 PCI Express graphics card, and while this is the same as the one in the RM system it offers 10 per cent worse OpenGL performance. Oddly, it's slightly better under DirectX. Given that this is the only system to include a 64-bit version of

Windows (and it uses 64-bit processors), theoretically enabling it to provide optimal performance in all areas, we were surprised to see it beaten by 32-bit operating systems.

The motherboard is SLI capable – great for anyone who needs maximum graphics power. It enables you to add a second graphics card and run them in tandem. The system also has a beautiful case that incorporates removable SATA drive bays, so you can add further storage as easily as slotting a new drive into a new bay. We would have gone with two 125GB disks instead of a single 250, and RAID would have improved performance. Nevertheless, this is a wonderful, well-balanced system at an attractive price.

VERDICT

PROS

- Fast processors
- Windows XP 64-bit
- Versatile case

CONS

- Poor warranty
- Just one hard disk

RANGE OF FEATURES	8
VALUE FOR MONEY	8
OVERALL	8

THIS ISSUE'S WINNER

Alienware MJ-12 7550a

The MJ-12 marries balance with a high level of performance, resulting in a superb system

DETAILS

PRICE

£4,177 / \$7,347* / €6,051*

*Currency conversion

(includes VAT)

PLATFORM

Windows XP Pro

MAIN FEATURES

- 2x AMD Opteron 2.2GHz processors
- Nvidia Quadro FX 4400 graphics card with 512MB RAM
- 2GB RAM
- 2x 160GB hard disks
- RAID 0
- 16x dual-layer DVD-RW
- Three-year warranty

MANUFACTURER

Alienware

WEBSITE

www.aliware.co.uk



When buying a 3D workstation, you may have to decide in advance which is most important to you: fast real-time

performance (provided by a lively graphics card with lots of memory), or fast frame rendering (courtesy of powerful processors, lots of system RAM and decent hard disks). With this system, you don't have to make the choice: it offers the best of both worlds.

This is one of two systems that uses the exciting dual-core 64-bit Opteron processors. These work in harmony, providing what is essentially a four-processor render farm! In terms of raw number-crunching power, two 2.2GHz Opteron CPUs provide double the power of two 3.6GHz Hyper-Threading Xeons for approximately the same price. The Arman system benchmarks just slightly faster than this one, but when we did a scene render in *3ds Max*, it only amounted to a difference of two seconds on a seven minute render.

The MJ-12 is the only workstation in our test to come with a Quadro FX 4400, and this can make a real difference. If you look at the SPECviewperf 8.1 benchmark results, the card seems to offer performance on a par with the ATI FireGL V7100. However, the Quadro has twice the amount of memory (512MB compared to 256MB), and this means that when you start to use lots of textures, the FX 4400 can keep on going smoothly without the need for disk caching.

The system comes with two 160GB 7,200rpm SATA Deskstar hard disks. We've found this brand to be very reliable. The drives are striped together via RAID 0 to make one high-performing system. If you prefer two separate disks, you can switch the RAID system off.

Deskstar drives tend to run quietly, but in spite of this, the MJ-12's loud operating

volume is a distraction that we could well do without. With three of these in close proximity, nobody could manage to hold a normal conversation.

If the system has one other serious weakness, it's its onboard RAM. Not only is it the slower DDR1 400MHz type (PC3200) there's only a lean 2GB of it. A system this powerful and costly needs more, and this is probably the sacrifice that has been made to pay for the graphics card. It would have been better to lose a hard drive.

With a three-year warranty, you can be confident that you won't be facing any nasty unexpected charges should anything go wrong in the near future. Although, the fact that it's a collect and return rather than an on-site warranty does mean you could face costly delays while faults are rectified. Given that



TWO OPTERON CPUS PROVIDE DOUBLE THE POWER OF TWO 3.6GHZ HYPER-THREADING XEONS

Alienware systems are built and shipped from the US, this may be serious cause for concern if you drive your machines hard.

This isn't a system with no crosses at all against its name, but it's a powerful and versatile all-rounder that's as happy rendering 3D or capturing video as it is editing complex scenes in real time.

VERDICT

PROS

- Powerful processors
- Powerful graphics
- Good hard disks

CONS

- Noisy
- Inadequate RAM

RANGE OF FEATURES

9

VALUE FOR MONEY

8

OVERALL

9

CONCLUSION | Alienware takes first prize

This is a fairly easy one to judge. The new dual-core Opterons simply blew all the other processors away, and unless you had a particular reason for choosing Intel or single-core processors, the HP, Dell and RM machines were out of the running before they even left the starting blocks.

Had those systems been significantly less expensive, of course they may have stood a chance. If they had included much more powerful graphics cards, they could have carved a niche in the real-time market, or appealed to those who need to edit large architectural, film or engineering datasets.

Admittedly, the RM machine did provide the best

graphics performance. However, it didn't manage to do this by a large enough margin over the Alienware system to sacrifice half the CPU processing power. This left just the Armari and Alienware systems. To be honest, the Armari system almost won on the strength of the case alone. It may look a little boring, but the wonderful removable drive system is such a huge bonus, enabling you to easily increase your storage as future needs dictate. With a couple of these in a studio, you also have a tremendously simple way to transport data between machines. However, you can cheaply put removable caddy systems into any tower, so it wasn't quite enough to take the prize.

By the same token, the extremely loud cooling fans in the Alienware machine were almost enough to snatch defeat from the jaws of victory. We doubt that we could endure this level of noise in our studio for any length of time. That said, there are noise

dampening solutions available if the whizzing and whirring bothers you. At least you can feel confident that the processors won't overheat! The fact that Armari uses the same processors suggests that the level of noise could easily be avoided by including quieter fans, and it's something we would strongly urge Alienware to consider.

Alienware could also learn from its competitor Armari by including a 64-bit version of Windows with each system. This would improve the machine's overall performance and prepare it for all of the 64-bit 3D applications that have just started flooding the market.

Although the Armari system did so much, and did it well, we felt that those areas in which it outperformed the Alienware system were inexpensive to achieve. The Alienware's graphics card was a far more compelling argument than a nice case or extra gigabytes of memory.

Noise levels aside, Alienware's MJ-12 7550a is a powerful, reasonably priced workstation that will serve you well, whatever area of computing you happen to be in. ●



THE ALIENWARE'S GRAPHICS CARD WAS A FAR MORE COMPELLING ARGUMENT THAN A NICE CASE OR EXTRA GIGABYTES OF MEMORY

FEATURES

Model	Processor	RAM	Storage	Memory	Audio	Hard Drive	Drive Speed	USB	Warranty	Price	Score
RM Xeon Workstation	2x Intel Xeon 3.65GHz	4GB DDR2	ATI FireGL V7700 PCIe	156MB	Onboard Soundmax	1x 74GB	10,000rpm	4x USB 2.0	One year on-site next day	£4,113 inc VAT	7
HP P4533AW	2x AMD Opteron 2.4GHz	8GB DDR	Nvidia Quadro FX 4600	512MB	ATI	2x 74GB	5,000rpm	6x USB 2.0	Three years worldwide on-site	£4,442 inc VAT	6
Dell Precision 670	2x Intel Xeon 3.6GHz	2GB DDR	Nvidia Quadro FX 4600	156MB	ATI 975	1x 60GB SATA (2x 74GB SATA)	7,200rpm SATA 10,000rpm SAS	6x USB 2.0	Three years	£4,029 inc VAT	6
Armari Gravistar XR	2x AMD Opteron 2.75GHz dual-core	4GB DDR2	ATI FireGL V7700 PCIe	512MB	Onboard AT 97	2x 74GB	7,200rpm	4x USB 2.0	One year on-site	£3,989 inc VAT	8
Alienware MJ-12 7550a	2x AMD Opteron 2.21GHz dual-core	2GB DDR	Nvidia Quadro FX 4600	512MB	ATI 97	1x 74GB	7,200rpm	4x USB 2.0	Three years on-site and on-planet	£4,177 inc VAT	9

PERFORMANCE COMPARISON (HIGHER IS BETTER)

Model	3D MAX-03*	CATA-01*	ENLIGHT-01*	LIGHT-02*	MAYA-01*	PROF-03*	SW-01*	3D-04*	3D-05*	3D-06*	SANDRA
RM Xeon Workstation	3718	1588	1124	1317	4649	5169	1166	2673	5465	21251	8790 / 14709
HP P4533AW	3014	1636	1116	952	4795	4672	1114	3174	1746	16344	7498 / 1314
Dell Precision 670	728	779	7	1125	1516	700	146	1114	1516	19005	5174 / 8904
Armari Gravistar XR	3008	2074	2111	1121	4117	4127	1110	1366	1511	43117	11745 / 11247
Alienware MJ-12 7550a	1114	1114	1111	1111	1111	1111	1111	1111	5236	41032	14012 / 18135

* SPECviewperf 8.1 benchmark



solidThinking Design 6.5

solidThinking Design delivers powerful NURBS modelling tools for artists - but it thankfully leaves the complex stuff behind

BY MIKE DE LA FLOR

DETAILS

PRICE

- £1,579* / \$2,745 / €2,745
- *Currency conversion

PLATFORM

PC / Mac

MINIMUM SYSTEM

PC

- Windows 9x or NT4
- Pentium II processor
- 8MB graphics card
- 128MB RAM

Mac

- Mac OS X
- G3 Power Mac
- 8MB graphics card
- 128MB RAM

MAIN FEATURES

- Multisweep
- Radialsweep
- Intersect in Construction Tree
- NURBS curves
- NURBS surfaces
- Class A surfaces
- Unlimited Construction History
- Polygonal modelling
- Solid modelling
- Simultaneous parametric and CV editing
- CAID/CAM integration
- Drafting and analysis tools
- Photorealistic rendering
- NPR rendering
- Keyframe animation

DEVELOPER

solidThinking Ltd

DISTRIBUTOR

EVOQE

WEBSITE

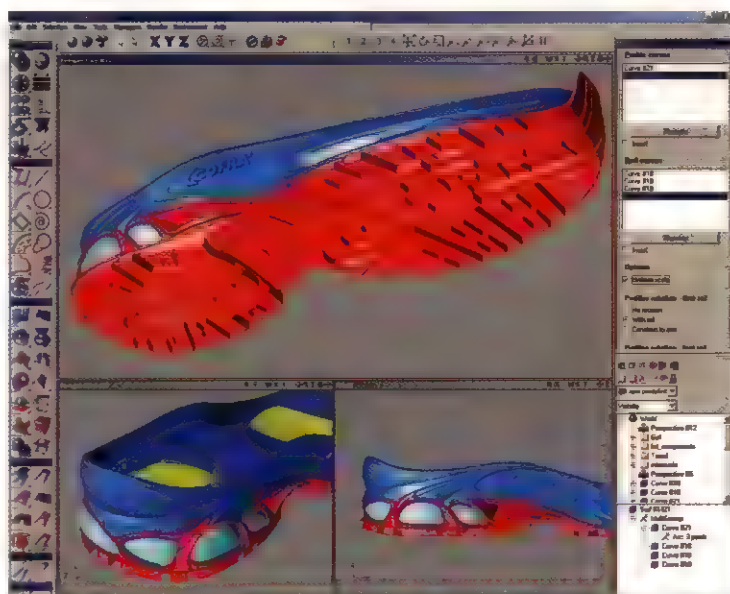
www.solidthinking.com



After years of producing professional NURBS modelling tools for Computer Aided Industrial Design (CAID), Italian-based solidThinking Ltd. introduced *solidThinking Forma*, *Design* and *Vantage* in 2002. *Forma* and *Design* are NURBS modellers that target artists, with *Forma* being the more basic and the less expensive of the two. *Vantage* is exclusively used for CAID pre-engineering. So, for the purpose of this review, *Design* will be our focus.

Being a slimmed-down version of *Vantage*, its primary competitors are polygonal and NURBS modellers such as *form.Z*, *Rhino* and *Amapi Pro*. But, as we'll see, *Design's* roots in the CAID industry will set it apart from the pack as a powerful, yet easy-to-use NURBS modeller.

One of the reasons that *Design* excels as a NURBS modeller is that solidThinking has clearly invested a lot of effort into streamlining the NURBS creation process. It doesn't take long for this to become clear. Not only is *Design's* interface easy to look at and well laid out, but the number of steps (tools, mouse clicks and input) required to create and edit curves and surfaces is



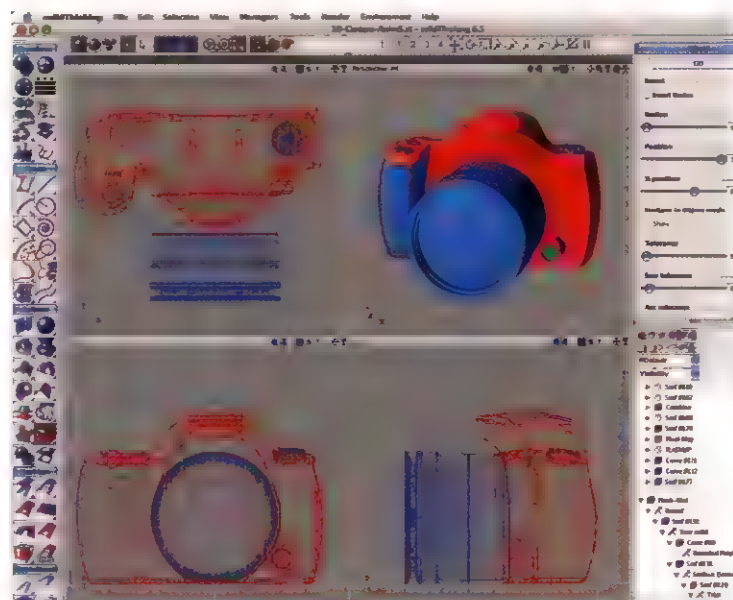
● Possibly the best features of *solidThinking Design 6.5* include its shallow learning curve, stability and efficient approach to NURBS creation and editing

reduced. By contrast *Amapi*, *Rhino* and especially *form.Z* leave much to be desired when it comes to user interface design and workflow. In the case of *form.Z*, much of its steep learning curve is a direct result of its complicated interface and working methods

in contrast, *Design's* unparalleled NURBS toolset is a direct result of its developer's lengthy experience in the professional CAID and manufacturing industry. Whereas many 3D applications targeted at artists began as polygonal modellers - adding NURBS almost as an afterthought - *solidThinking* products have never been anything other than professional NURBS modellers, and this dedication and experience is exemplified in well-organised workflow.

NURBS WITH EASE

Design features advanced NURBS curve creation and editing tools, as well as a remarkable set of surfacing tools. Curves



● *solidThinking Design's* interface is well-organised and, compared to some software we've seen, actually seems to be designed with the end user in mind



● On offer is superb NURBS modelling, solid modelling and modest polygonal modelling tools, and an unmatched construction history

RELATED PRODUCTS

- *Amapi 7.5 Pro*
Reviewed Issue 62
- *form.Z 5*
Reviewed Issue 63

include NURBS curves, Metacurves, Polylines, Arcs, and primitives such as circles, helices and rectangles. Surface tools contain Skin, Loft, Extrude, Coons and Lathe. Editing surfaces and curves, or building complex surfaces, is fairly straightforward, with tools such as Trim, Blend Surfaces, Intersect, exceptional Rounding tools and Booleans. Debuting in version 6.5 are Multisweep (like Birail but with unlimited profiles or rails), Radialsweep and Intersect in Construction Tree, which enables users to dynamically trim multiple intersecting surfaces. Simply including the obligatory list of tools doesn't do *Design* justice, as its modelling strength doesn't just come from the number or type of tools it features, but also from its appealing interface and efficient workflow.

Modelling tools are fully parametric, which, of course, means that they can be edited numerically at any time during construction. *Design* also makes it possible to mix CV editing right along with parametric editing, providing unmatched flexibility during the modelling process.

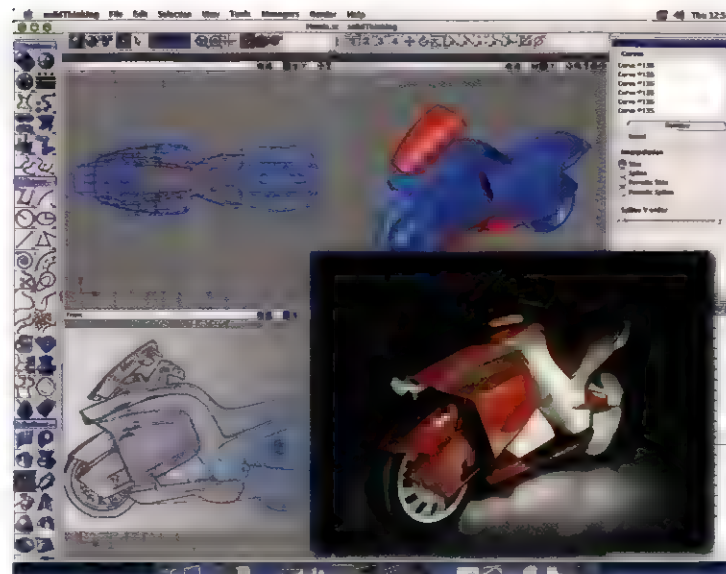
Although, in version 6.5, *Design* received a boost with new tools and enhancements, regrettably, it still lacks the Make Manifold and Shell tools both found in the more expensive *Vantage*. And although *form.Z* and *Rhino* are also missing manifold tools, Eovia's inexpensive *Amapi Pro* features a noteworthy Manifold Volume tool.

POLYGONS IF YOU MUST

Buying *Design* to model with polygons is like buying a Lamborghini Gallardo and driving at 20mph. Although it ships with a comprehensive set of polygonal modelling tools, which include vertex, edge and face modelling and subdivision surfaces, they're



● With robust analysis, drafting, engineering and dimensioning tools, *solidThinking Design* is also a capable modeller for industrial design.



● 3D artists who avoid NURBS because of a perceived difficulty in modelling with them will be surprised by *solidThinking Design 6.5*'s non-intimidating and uncomplicated workflow.

modest when compared to *form.Z*'s or *Amapi*'s polygonal tools. However, this is acceptable, because *Design* isn't touted as a polygonal modeller, but rather as a robust NURBS modeller. Its polygonal tools are there to deal with the occasional imported mesh model or to convert NURBS models into polygonal models.

Adding to its ease of use, *Design* has one of the best implementations of construction history we've seen. *Design*'s construction history keeps track of all of the construction parts of each object, such as profile curves and surface functions, and enables users to effortlessly navigate and edit the history of any object. Though similar to *Amapi Pro*'s Dynamic Geometry, *Design*'s construction history sports a more efficient and very editable tree-based interface. Rivals *Rhino* and *form.Z* are left behind in this respect, as they don't feature any construction history at all.

LIMITED ANIMATION

As a dedicated NURBS modeller, *Design*'s texturing, animation and rendering tools are basic. Texturing options include procedurals with standard surface parameters, image-based shaders and a nifty texture positioning tool. Animation is keyframe-based, which means ordinary camera and object motion.

However, *Design*'s rendering is excellent for creating photorealistic still images for presentations, as it features raytracing options and radiosity, although it can be a bit slow for animation. Worth mentioning is the non-photorealistic rendering, capable of

producing painterly artistic styles as well as line drawings. Here, *Design* and *form.Z* are essentially equivalent, since they both license their rendering technology from UK-based LightWork Design. However, *Design* may yet outstrip its rivals, as *solidThinking* has announced strategic partnerships to provide *mental ray* rendering for its users.

POWERFUL YET SIMPLE

Without a doubt, *Design*'s most important feature is its non-intimidating and efficient approach to NURBS modelling, which may yet win over 3D artists who traditionally shy away from NURBS in favour of polygonal modelling. For those that need more than just a 'modeller', *Design* is also a fully featured CAD/CAM solution with drafting



● Excellent photorealistic rendering is achievable by employing the raytracing and radiosity options within *Design 6.5*.



● As a dedicated modeller, *solidThinking Design 6.5* provides decent-quality basic keyframe-based animation capabilities.



● Modelling tools making their debuts in the 6.5 release include Multisweep, Radialsweep and Intersect in Construction Tree.

BUYING DESIGN 6.5 TO MODEL WITH POLYGONS IS LIKE BUYING A RACE CAR AND DRIVING AT 20MPH

and analysis tools, and easily integrates into most manufacturing systems. Additionally, it works straight out of the box and is a thoroughly stable application, though installation can be somewhat tricky.

Priced at \$2,475, *Design* is comparable to *form.Z RadioZity* at \$2,395. *Rhino* bundled with *Flamingo/Penguin/Bongo* is slightly cheaper at \$1,595 – while *Amapi Pro* is much cheaper, coming in at a mere \$779. Nevertheless, if you're looking for a NURBS modeller with power but no added complications, *Design* is for you. ●

VERDICT

PROS

- Shallow learning curve
- Stable interface and workflow
- Top-notch NURBS tools

CONS

- Expensive
- No scripting language
- No Make Manifold tool

RANGE OF FEATURES	9
VALUE FOR MONEY	9
OVERALL	9



Antics Pre-Viz

A new real-time pre-visualisation tool for production, with a learning curve so easy, even a producer can use it!

BY PETE DRAPER

DETAILS

PRICE

• £570 / \$995 / €855*
*Special online prices

PLATFORM

PC

MINIMUM SYSTEM

• Windows 2000 / XP
• 1.5GHz processor
• 512MB RAM

MAIN FEATURES

- No need for keyframing
- Set up multiple takes
- Set custom poses of characters
- Interactive objects in large library
- Idle poses for more realism
- Timeline editing

DEVELOPER

Antics Technologies Ltd

WEBSITE

www.antics3d.com



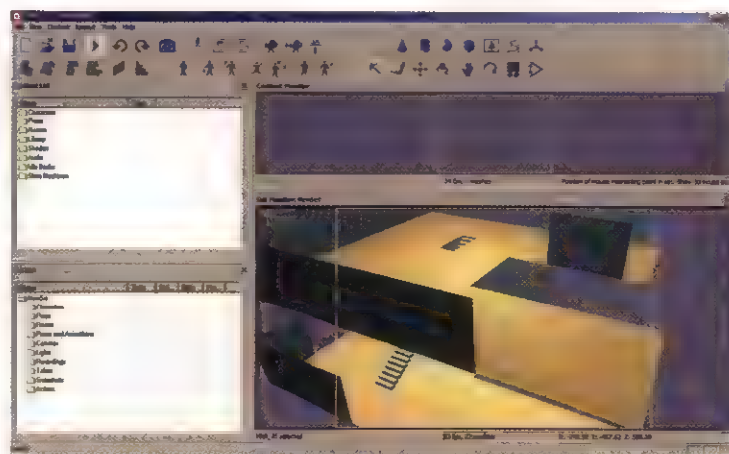
Antics Pre-Viz is designed for preproduction and to complement (or replace) storyboards to help

directors and directors of photography to visualise shots. Because of the target market having virtually no hands-on experience with 3D software, the interface and operation of *Antics Pre-Viz* needs to be as simple as possible, and for the most part, it is.

By default, you're introduced to a blank canvas where you can draw out a set using a simple procedure of clicking grid points to define floor plans, dragging out walls and assigning materials. This is straightforward stuff, and the implementation is simple and intuitive.

Each introduced prop has a defined 'no go' area, which an introduced character can avoid when you click on a different part of the set for him to walk to. Some objects (for example, tables) are defined as containers that allow for other objects to be placed on them. Walls can have additional objects introduced to them, such as doors and windows that automatically snap to, cut and position themselves in the place you drag them to, just as floors automatically cut out holes for dragged-out stairs. The really clever part is that if you instruct a character to navigate from one room to another to sit down on a chair, even on another level, he will navigate around any existing props in the current room, open the door, close it behind him and walk over to the chair and sit down.

Obviously, most motion parameters can be amended, such as walk speed. To add extra realism to your character, you can even add weighted idle states and position



• Within the *Antics Pre-Viz* dockable interface, creating floorplans and walls is a simple matter of dragging out points and dragging a wall around the floor's perimeter

him in poses that you can blend to when required, pick up and put down objects, interact with objects, change his skin, walk type, and so on. Some of this needs additional initial set-up time. Cameras, lighting and paths for objects to follow can be introduced and tweaked as necessary.

IT'S ALL IN THE TIMING

The only fiddly part comes in the Action Script Editor, which is the part where you define the timings of objects, characters and cameras so that they follow the script. This is a case of mastering the syntax and is where the learning curve really kicks in. You may not get everything one hundred per cent right first time, but your project can be recorded and edited in the timeline, which allows for re-timing and camera cuts before churning out an AVI of that individual 'take'.

By default, you can't import any extra models into the scene. If you're a *Max* user, you'll need to purchase the *3ds Max* export



• The timeline provides the facility to fine-tune your animation from the Action Script Editor, enabling you to insert cut points

plug in. It would have been nice to have this included in the package, as well as other exporters for other 3D packages.

Although fiddly in places, *Antics Pre-Viz* is easy to use. Thanks to the excellent video tutorials, even a total 3D virgin wouldn't have much of a problem with the software, although they would need to use the pause button once in a while, or skim through the manual for help, especially when it comes to the challenging Action Script Editor. ●



• So that you can check what the asset looks like before you add it to the set, it can be previewed in the Content Monitor beforehand



• A shader can be designed and edited in its own shader window, assigning textures and material properties such as specular

VERDICT

PROS

- Easy to use, short learning curve
- Ability to add new poses

CONS

- Viewport can lag at times
- Undos partially supported

RANGE OF FEATURES

8

VALUE FOR MONEY

8

OVERALL

8



PolyTrans
and NuGraf

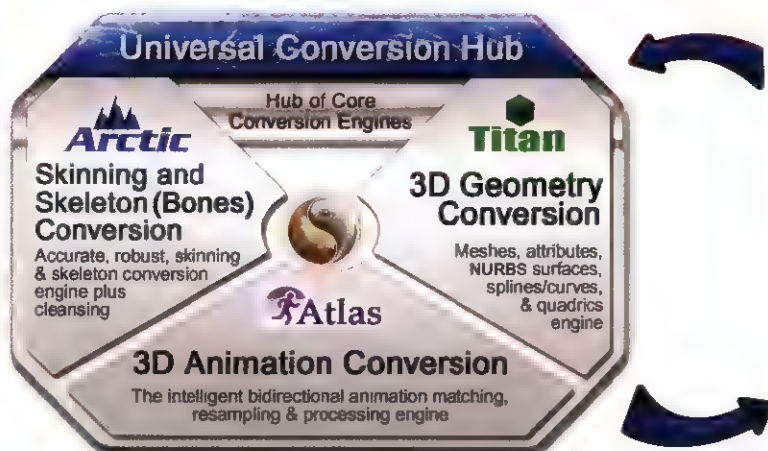
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"We purchased PolyTrans and used it for 3D data conversion and optimization of datasets created for the NASA MER space program (Mars Exploration Rover Mission). It is fantastic software. My colleagues at another NASA center spent days using three software packages on what took me 5 minutes using PolyTrans alone (polygon reduction in batch mode worked like a charm). I just wanted to thank you for creating such a great tool."

Boris Rabin, Visualization Development Lead,
NASA/Ames Research Center, FutureFlight Central

Common Solutions & Benefits:

- Cross-converts between all major animation packages and 3D file formats with true robustness & quality
- Import and compose 3D scenes from a plethora of 2D/3D file formats then render out to high quality images for print media, training manuals, or marketing brochures
- Popular for ProE, SolidWorks, STEP, etc. to D.C.C.
- Highly refined & popular MAX <=> Maya pipeline via native plug-ins, with over a decade of development
- Robust import & rendering of CAD and AEC models
- Publish to WEB streaming file formats such as Viewpoint VET, OpenHSF, SW3D, U3D, XGL & VRML1+2
- 17+ years development. Personal and dedicated hands-on support directly from the Okino developers
- Solid, robust solution used around the world by most major companies and professionals
- Easily develop new plug-in modules such as import/export, renderers, modelers, etc.
- Mesh & scene processing toolset
- Converts entire scene files, including meshes with holes, trimmed NURBS, hierarchy, animation (format specific), pivot points, vertex normals, U/V tangent vectors, vertex colors, texture coordinates, textures, lights & cameras.

Major Features:

- Converts & optimizes all major CAD formats to MAX, Maya, XSI, LW, FLT and dozens more file formats and 3D programs
- 'Document-centric' architecture, extensive user interface plug-in system-level API, and 2D/3D import/export API
- Top notch smooth skinned mesh & skeleton conversion
- Recent converters: Inventor 10, U3D, XGL, PDB, BVH & Acclaim (Mocap), FilmBox 6, DWG 2005+, ACIS SAT R15, Houdini GEO, JT Open, XSI (with shader trees + NURBS), CATIA v4 + v5.
- Excellent built-in polygon reduction system
- Integrated multi-media editor & viewer
- Integrated WEB & file search system
- All Granite CAD converters for US\$395 (ProE, ACIS, IGES, STEP, Parasolid)
- Animation conversion amongst MAX, FBX, Maya, XSI, Soft-3D, LW, DirectX, U3D & more
- NVIDIA & ATI real-time shader support, with third generation OpenGL support
- "PolyTrans-for-3dsmax" & "PolyTrans-for-Maya"
- Plug-in modules from third party vendors, including AIR renderer from SiTex Graphics
- Scanline rendering, material editing & texture parameter editing in PolyTrans
- NuGraf only: Caustics, an amazing lens flare system & sunlight calculator



Example
"CAD to D.C.C"
conversion. SolidWorks
to Maya. Converted and
optimized by PolyTrans-for-Maya.
© 2005, Designed and Manufactured
by Daka Designs Ltd. Hong Kong.



Excellent support for
third party developers!

Okino Computer Graphics, Inc.
Tel: (Hk) 1-888-3D-OKINO (1-905) 672-9328
Web: <http://www.okino.com>. Email: sales@okino.com
All products mentioned are registered trade names of their respective holders.



Genetica 2 Pro

Create an infinite variety of seamlessly tileable textures with minimal effort, and revolutionise the way you work

BY MAT BROOMFIELD

DETAILS

PRICE

- Pro version
£228 / \$399 / €331*
- Standard version
£74 / \$129 / €107*

*Currency conversion

PLATFORM

PC

MINIMUM SYSTEM

PC

- Windows 2000/XP
- Pentium III 450MHz
- 256MB RAM

MAIN FEATURES

- Node-based texture generator
- Create colour and bump maps
- Generate textures at user definable scales
- Extremely versatile
- Add as many nodes as you like and export from any level

DEVELOPER

Spiral Graphics

WEBSITE

www.spiralgraphics.biz

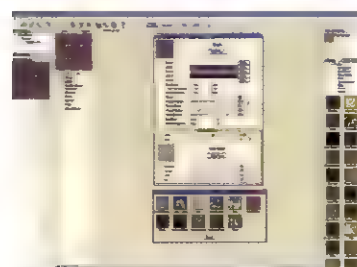


As any 3D artist knows, your models are only as good as the textures you put onto them. A great model will be let down by poor textures, but a poor model can be dramatically enhanced by good textures. However, texturing is a significant skill in its own right, requiring mastery of 2D and 3D software. If you're one of a majority of 3D artists who needs to take a project through every stage from conception to completion, *Genetica 2 Pro* will be a real boon.

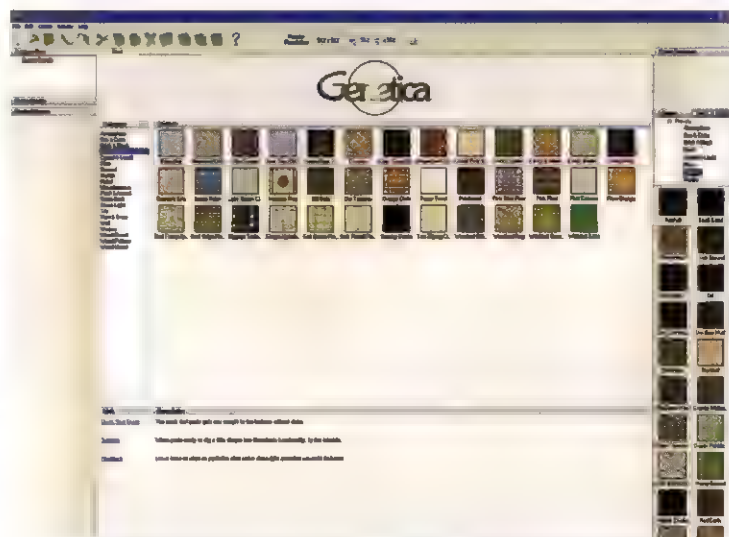
The program is a node-based, procedural texture engine for creating multi-scale, tileable textures. It enables you to select from one of over 500 ready-made textures, which can be exported at any scale up to 3,000 x 3,000 pixels. You can also take any of the supplied textures and use them as a starting point from which to create your own variations. These two options will suffice in the vast majority of cases, because it takes only a few minor changes to transform one texture into something completely different. However, for special projects, you can also create your own textures from scratch.

TEXTURING TRICKS

The construction engine uses a series of linked nodes to create a texture. These progressively add detail until the desired result is achieved. For instance, the root node may consist of a photograph combined with a procedural pattern. This will be linked to a node that determines how the photo and pattern are combined. Next might be a Weathering node for adding grime or deep,



● Each node type has its own editor, providing billions of permutations, especially when you consider the Randomiser function



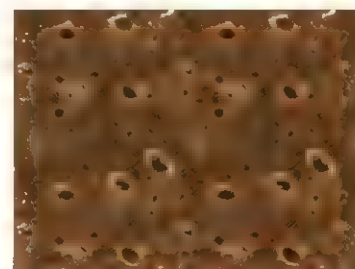
● The *Genetica 2 Pro* gallery: select from more than 500 excellent seamless preset textures, which can be edited further and can be used up to a generous 3,000x3,000dpi

textured cracks. Below that may be a Sharpening node for clarifying texture details. Next, you might add a node that adjusts colour, brightness or contrast. Finally, you could add a Tile node that applies a tile pattern, such as crazy paving, or something exotic, such as a Mediterranean floor tile.

The great thing is that you can render a pattern at any node level, and this often produces pleasant but unexpected results. You can also extract bump maps at any level, enabling you to create, for example, weather-free bumps.

The latest version of *Genetica* brings new Lab nodes, which are essentially nodes that provide a simple interface to achieve complex effects. For instance, the new Hair Lab enables you to create hair, fur, grass and many other types of strand-based textures. But while there are many useful parameters, one obvious omission is an orientation option. Although you can rotate your textures when you map them to objects, it's much easier if the texture is already generated at the correct angle. It would also be nice to generate animated textures too.

The program seems to take a long time (several minutes or more) to render textures at higher resolutions. Admittedly, you can do test renders at lower resolutions first.



● This toad-skin texture shows the kind of quality you can achieve. The detail can be edited to hide any obvious tiling effects

Furthermore, every detail is mathematically scaled up to your required resolution to produce flawless textures at any size.

Genetica 2 Pro is more versatile than *MaP | Zone*, but it lacks the versatility of some other programs. Nevertheless, it's a valuable asset for any 3D professional. ●

VERDICT

PROS

- Easy to use
- Exceedingly versatile
- Create bump maps

CONS

- Obvious parameters are absent
- No animation

RANGE OF FEATURES

9

VALUE FOR MONEY

7

OVERALL

8

RELATED PRODUCTS

- *MaP | Zone*
Reviewed, Issue 51



Millennium Muscle Maps

Now you can use your DAZ figures for scientific and physio purposes with these new, versatile muscle textures

BY MAT BROOMFIELD



DAZ's Millennium figures are fantastic resources for the 3D community but, until now, their scientific and educational value has been under-exploited. Perhaps the fact that former parent company Zygote specialises in expensive biomedical models is one reason why DAZ has historically steered clear of this kind of content.

However, via its broker program, DAZ has now released a set of muscle textures that will enable horror artists and animators, educators, doctors and sports physios to create their own muscle diagrams.

The maps are available in three sets: one for David, one for Michael 3 and Freak, and one for Victoria 3 and Stephanie. Sets cost \$35 each, or you can get the lot for a very reasonable \$60 (about £34). Each set

comprises a head and body map, and a set of bumps for both, which can be applied in a single click via *Poser* or *DAZ Studio*.

The maps are hand drawn, and while they're high resolution, they have a painterly look about them that works well at middle to long distance. The bumps add very little

to the textures, and as yet, the company doesn't bundle displacement maps with its products.

However, despite these limitations, the maps are well produced, anatomically accurate, and provide artists with excellent value for money ●



● The set comes with maps for all five of the adult Millennium figures

VERDICT

PROS

- Easy to use
- High resolution

CONS

- No displacement maps
- No advanced *Poser 5/6* texture functionality

RANGE OF FEATURES	7
VALUE FOR MONEY	10
OVERALL	8



DETAILS

PRICE

- £34* / \$60 / €50* (for set)
- *Currency conversion

PLATFORM

PC / Mac

MINIMUM SYSTEM

- Any PC or Mac capable of running *Poser 4* or *DAZ Studio*

MAIN FEATURES

- 12 high-resolution maps
- Covers the main DAZ adult characters
- Includes bump maps

DEVELOPER

DAZ Productions

WEBSITE

Supergraphx for C4D

Supergraphx is an integrated plug-in for Cinema 4D that harnesses the power of the 'superformula' to find and create new organic forms and curves

BY ADAM WATKINS

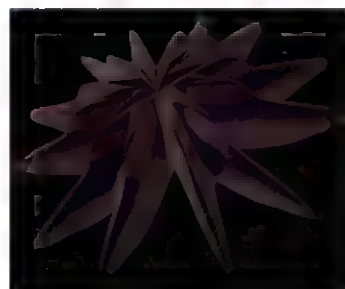


Organic shapes are always tricky to capture. The curves found in nature are deceptively difficult to find in the digital world of 3D. Genicap's *Supergraphx for Cinema 4D* attempts to provide a procedural modelling solution that allows for a quick exploration of a variety of organically inspired shapes.

Perhaps the most interesting thing about this plug-in is that there isn't anything like it on the market. *C4D*'s built-in Parametric Primitives are among the best procedural modelling solutions available, and *Supergraphx* pumps this basic tool full of creative steroids, enabling you to create curving, diving, dynamic shapes.

It's definitely a fun plug-in that's easy to use and easy to adjust, allowing for a particularly smooth flow of exploration from

form to form. We found the ability to find new abstract or abstracted forms to be flawless. But problems appeared when we tried to find any real-world application for such forms. The examples shown on the site include shells and a beautiful collection of abstracted digital art. Beyond this realm,



● Although shapes are beautiful, it's hard to imagine an exact place for their effective use

we couldn't create a shape that we could conceive of using in a commercial setting, and the samples on the site are uninspiring.

If you're looking to ignite your raw abstract creative flames, this package could be a great tool. However, it would be hard to justify for most people's toolset. ●

VERDICT

PROS

- Easy to use
- Creates complex visual forms
- Seamlessly integrated

CONS

- Commercial use questionable
- Lacks absolute control of form

RANGE OF FEATURES	4
VALUE FOR MONEY	2
OVERALL	5



DETAILS

PRICE

- £167* / \$292* / €242
- *Currency conversion

PLATFORM

PC / Mac

MINIMUM SYSTEM

- Any PC or Mac capable of running *Cinema 4D 8.5* or later

MAIN FEATURES

- Integrated into *Cinema 4D* workflow
- Simple interface
- Quick procedural modelling

DEVELOPER

Genicap Corporation NV

WEBSITE

www.genicap.com

DETAILS

FOR
Maya
PUBLISHER
3DNY
PRICE
£28 / \$49 / €41*
*Currency conversion
RUNNING TIME:
5 hours



Maya | MPR (3DNY MediaBook)

The subject matter of multi-pass rendering is a bit like the description of space in *The Hitchhiker's Guide To The Galaxy* – big! Tackling it in any format isn't easy. 3DNY's approach is to put it into a unique and accessible format, not unlike *The Guide*, but does it actually work?

Fortunately, it does. It explains how to take control of an MPR project by introducing simple methods, and goes on to present more elaborate render tips and tricks by way of movies, text and imagery. The context is broken down into a structure

that can be easily dipped into later, which is a good idea if you're new to MPR.

Some people may argue that you could do the same with a proper book. This may be true, and the information may be easier to assimilate this way (I've read passages in books more than once to really understand them), but to its credit, 3DNY's software does virtually the same and does it well.

VERDICT

Maya | MPR certainly does what it says, but we still prefer something we can easily read on a train. **8**

DETAILS

AUTHOR
Nicholas Boughen
PUBLISHER
Wordware Publishing
PRICE
£24 / \$33 / €44
PAGES
406
ISBN
1-55622-401-X



3ds Max Lighting

This book begins by offering comprehensive coverage of areas of natural and set lighting, progressing onto lighting types within 3ds Max, and illustrating each point with a few quick example tutorials.

However, it feels more substantial largely due to the amount of theory the author goes into, and rightly so, as lighting is such a broad aspect of CG that many artists tend to skim over as an afterthought. Boughen attempts to right this wrong and makes a solid fist of it, with sound theory and introduction to Max's lighting system

We would have liked the book to be aimed more at an intermediate to advanced audience, though the second half of the book does get there. The thing that lets it down is the print quality, which seems a little cheap. There are monochrome images throughout (with a small colour section), which isn't ideal if you're talking about lighting and colour theory!

VERDICT

Aside from the poor cover image and cheap print quality, the content is well structured. **8**



DETAILS

FOR
LightWave
PUBLISHER
KURV studios
PRICE
£20 / \$36 / €30 (each)
RUNNING TIME:
8 hours each

Digital Car Studio – LightWave 8 Vehicle Modelling Vol. 1 & 2

Digital Car Studio – LightWave 8 Vehicle Modelling is spread across two volumes and aims to provide the viewer with a comprehensive guide to creating an ultra-realistic car model using LightWave Modeler. Your host is the affable Gerald Abraham, who explains the techniques of using spline guides and SubPatch geometry to build up a very cool model of a Chevrolet SSR.

'Comprehensive' is certainly what you get, as there's no less than 16 hours' worth of QuickTime video spread liberally across both disks, in which every single step of the modelling process is laid bare. You pretty much witness every single mouse click Abraham makes as he builds the car up from scratch.

You can't argue with the quality of the final model nor the abundance of the materials but, given these, it's a real shame some of the time wasn't devoted to the subject of lighting and rendering the car to make it look like the stills on the

cover. Because the modelling techniques only reveal themselves through specific discussion of the Chevrolet model, busy professionals are going to have to wade through an awful lot of video, when they're more likely to want to watch a few minutes here and there, determine the simplicity of the underlying technique and get straight on with their own project. And given that Volume 2 picks up directly where Volume 1 finishes, it would seem rather pointless to purchase just one disc at a time. In fact, they may as well have been sold as a two disc set.

Niggles aside, Abraham is a relatively good presenter; the quality of the screen-captured QuickTime video is very good, and both DVDs also include the usual mixed bag of bonus tutorials found on other popular KURV studios products.

VERDICT

A comprehensive, well-polished and high-quality training product with only a few niggles. **8**

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Buyer's guide

Whether you want advice on choosing a specific software package, or an overview of what's on the market, this database of past 3D World reviews contains the information you need to make the right buying decision

Online Resources



● This guide lists prices in Pounds Sterling and US Dollars. For a quick currency conversion: www.xe.com



● For non-3D software, our new online portal holds a wide range of reviews: www.3dworldmag.com



When new 3D users contact the magazine, the most common question they ask is: "Which software package should I buy?" To which the honest response is: "That really depends on you."

Unlike Web design or 2D illustration, there's no single, well-established software package that all professionals use. Instead, choosing a 3D application is largely a matter of personal requirements, not to mention individual taste. Before you begin downloading demos, however, it does help to have a broad overview of what's available – and that's where this buyers' guide comes in.

In this guide, you'll find a list of the key software packages in a particular market sector, the issue of the magazine in which each one featured and a brief summary of the review. These summaries represent a single reviewer's opinion, but they should give you an idea of the key characteristics of each application.

QUESTIONS, QUESTIONS...

Before diving in, there are two fundamental questions you should ask. Firstly, are you pursuing 3D as a professional career? And secondly, what kind of 3D work do you aim to produce?

If the answer to the first question is 'no', the only limitations on your choice of 3D software are your budget and operating system. In the hands of a skilled user, inexpensive applications can generate impressive results, although they might not do so as quickly as more expensive software (or in a way that professional 3D artists would deem conventional).

If you do aim to make a living in 3D, however, you'd be well advised to pick a 'professional' application: those listed in the upper table on the page opposite. Expensive packages don't necessarily generate better results, but they tend to produce work quickly,

flexibly and reliably – all important issues if deadlines are looming. And while studios don't usually hire staff solely on the basis of the software they've used, mastering a 'name' application will familiarise you with high-end tools and increase your chances of freelance work.

Another consideration is whether you intend to produce animations or still images. As a crude generalisation, illustrators and graphic artists often favour pro applications at the lower end of the price scale, while those working in animation, visual effects or game design tend to opt for more expensive packages.

Ultimately, however, there's no substitute for hands-on experience. All major applications have demo versions that you can

CHOOSING APPLICATIONS IS ALL ABOUT PERSONAL REQUIREMENTS AND INDIVIDUAL TASTE

download and experiment with, and before you reject the more expensive packages, remember that many of them – particularly *Maya*, *Houdini*, *LightWave* and *Softimage|XSI* – have free 'learning' editions. Educational deals also offer students the chance to buy full versions of professional software for the price of a handful of DVDs. To see if you qualify, check the website of the software package you're interested in.

Fortunately, there are very few 'bad' 3D packages on the market, so choosing the right one for you ultimately comes down to personal taste. Do your research, consult the magazine, and be prepared to experiment – but above all, enjoy yourself!

ALL-ROUND 3D PACKAGES (UNDER £250)

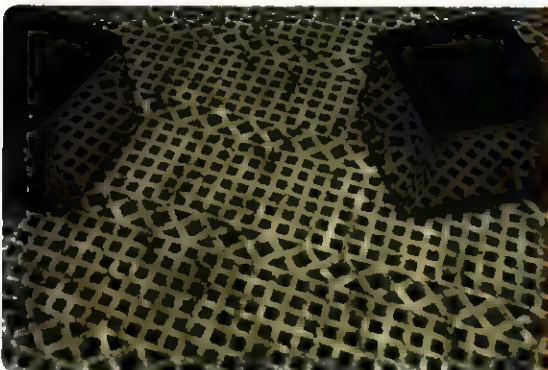
PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	SCORE	REMARKS	SCORE
AIST MOVIE 3D	PC	Cut-down version of Realsoft 3D, aimed mainly at home movie makers dabbling in 3D	£68* (\$132*)	AIST	www.aist.com	N/A	[Not previously reviewed in 3D World]	N/A
CARRARA 3D BASICS	Mac/PC	Extremely stripped-down version of a mid-price app, aimed at hobbyists and casual users	£39 (\$49)	Eovia	www.eovia.com	N/A	[Not previously reviewed in 3D World]	N/A
CARRARA 4 STANDARD	Mac/PC	Inexpensive all-rounder lacking some of the high-end tools from Carrara 4 Professional	£209 (\$279)	Eovia	www.eovia.com	60	Still a solid purchase for a novice all-round 3D user on a budget, Carrara 4 fixes bugs from earlier versions, but lacks the new rendering tools of the Pro edition	8
GAMESPACE	PC	Cut-down trueSpace with extra games tools, aimed at modders and indie game developers	£154* (\$299)	Caligari	www.caligari.com	46	Goes some way to providing a one-stop solution for the mod community, but one with rough edges on release. Those on a real budget may stick to freeware	7
HASH ANIMATION MASTER	Mac/PC	Cult entry-price animation app, chosen by many leading animators for personal work	£154* (\$299)	Hash Inc.	www.hash.com	59	Powerful, intuitive rigging and animation package, complemented by a simple, versatile modeller. Now adds hair support and a sprite-based particle system	9
PIXELS 3D	Mac	The premier – and possibly sole – Mac-only 3D package, a cult app amongst Mac fans	£77* (\$149)	Pixels Digital	www.pixelsdigital.com	42	Great value for money and includes a number of high-end tools including fluids and cloth. Good render quality, but very slow, and workflow could be improved	8
REALSOFT 3D 4.5 (FOR LINUX)	Linux	Even better value than the PC edition; most Linux users' main alternative to freeware	£140* (\$270*)	Realsoft Graphics	www.realsoft.com	35	Excellent render quality for the price, but more suited to still images than animation work; particularly character animation. OpenGL could be improved	9
SHADE 7 DESIGNER LE	Mac/PC	Very inexpensive, if limited, all-round package extremely popular with hobbyists in Japan	£56* (\$109)	Curious Labs	www.curiouslabs.com	58	Clearly geared towards the student or amateur; this cheap and cheerful version of its bigger siblings shares the basic modelling tools but is otherwise limited	7
SHADE 7 STANDARD	Mac/PC	Mid-level edition; more expensive than LE, but lacks some key tools of Shade 7 Pro	£107* (\$209)	Curious Labs	www.curiouslabs.com	58	Similar in toolset to the Professional edition, but lacks automatic smoothing and interpolation. A reasonable buy if you can handle the translation issues	7

ALL-ROUND 3D PACKAGES (OVER £250)

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3DS MAX 7.5	PC	Long-established 3D package still a standard in the games and architecture industries	£2,895 (\$2,495)	Autodesk	www.autodesk.com	66	A solid point release, although only available to subscribers... 3ds Max 7.5 adds handy new high-level features and better mental ray rendering	8
CARRARA 4 PRO	Mac/PC	Inexpensive all-round app, now targeted more specifically at professional illustrators	£419 (\$579)	Eovia	www.eovia.com	60	Retains Eovia's unique—and possibly offputting—system of workflow divided into rooms, but dramatically improves animation and high-end rendering	8
CINEMA 4D 9 BASE	Mac/PC	Entry-level edition only; some important tools must be purchased as add-on modules	£425 (\$695)	Maxon	www.maxon.net	58	Not as good value as an upgrade as version 8, but builds on previous innovations to deliver a capable and professional 3D package	9
CINEMA 4D 9 XL	Mac/PC	A powerful renderer makes this increasingly respected app the choice of many illustrators	£1,148 (\$1,895)	Maxon	www.maxon.net	58	[This edition not specifically reviewed in 3D World] Prior to Lightwave, but the MOCCA and Advanced Render modules are essential to many pro artists	9
CINEMA 4D 9 STUDIO	Mac/PC	Top-level edition of Cinema 4d, adding in BodyPaint 2 and unlimited network rendering	£1,187 (\$1,995)	Maxon	www.maxon.net	59	Excellent all-round package reviewed in 3D World. Primarily for large facilities, despite limited add-on modules, although BodyPaint is a set-as-added extra	9
EMAS 5.1	Mac/PC	Perennial professional-quality animation package with a strong cult following	£463* (\$695)	E-Technology Group	www.etechnologygroup.com	59	Still an insanely fast-rendering and animation package, but now minus a built-in modeller since the last, admittedly thorough, point release	8
HOUDINI 7 SELECT	PC/Linux	Entry-level edition, primarily aimed at studios looking to build a lower-cost Houdini pipeline	£825* (\$1,999)	Side Effects Software	www.sidefx.com	45	Reviewed at version 5.1 A good addition to a Houdini studio, but lack of advanced character animation tools means it's not a standard one-package	7
HOUDINI 7 MASTER	PC/Linux	Powerful procedural animation package, few skilled users, but a staple of much VFX work	£8,769* (\$17,000)	Side Effects Software	www.sidefx.com	41	[Reviewed at version 6] Retains all the power of previous versions, but makes considerable advances in terms of ease of use. Also adds GPU rendering	8
LIGHTWAVE 3D 8	Mac/PC	Another long-established package, used in a wide range of work, notably TV effects	£995 (\$1,595)	NewTek	www.newtek.com	53	Fast, handles character animation and dynamics and streamlines workflow, but leaves the rendering and underlying structural robustness of the app untouched	8
MAYA 6.5 COMPLETE	Mac/PC/Linux	Lacks some high-end tools, but an affordably priced edition of Maya for many 3D markets	£1,499 (\$1,999)	Alias	www.alias.com	64	Still the one to beat in many fields of 3D, but although much faster and slicker many felt that Maya's last point release lacked that elusive 'wow' factor	7
MAYA 6.5 UNLIMITED	Mac/PC/Linux	Powerful all-round package, still the one to beat when it comes to film effects work	£4,899 (\$6,999)	Alias	www.alias.com	64	Like rendering in mental ray, but it's not exactly a perfect upgrade—it feels like a patchwork improvement. Artists on a budget may want to wait for Maya 7	7
REALSOFT 3D 4 (FOR PC)	PC	Underpublicised, but well-regarded, mid-priced application; good built-in renderer	£415* (\$795)	Realsoft Graphics	www.realsoft.com	61	Enhanced Sub-D modelling and texturing make this a viable alternative to better-known 3D illustration apps. Still weak at character animation, however	9
SHADE 7 PRO	Mac/PC	Very popular professional 3D package, particularly popular in the world of architectural visualization	£5,995 (\$9,995)	Curious Labs	www.curiouslabs.com	48	Product modelling, tools and a reasonably powerful renderer, but the interface and animation tools seem more suited to many western 3D artists	7
SOFTIMAGE XSI FOUNDATION	PC/Linux	Aggressively marketed entry-level edition of a leading 3D app, very powerful for the price	£299 (\$495)	Softimage	www.softimage.com	55	Fuller featured than many entry-level editions of major packages, Foundation originally sold for \$1,995—sets a new benchmark for 3D software pricing	9
SOFTIMAGE XSI ESSENTIALS	PC/Linux	However well-balanced all-round package, also much reduced in price over last year	£1,795 (\$2,995)	Softimage	www.softimage.com	55	A solid upgrade to a powerful package, also reviewing body dynamics, a fully featured particle system and more texturing and material tools	9
SOFTIMAGE XSI ADVANCED	PC/Linux	Widely used in games and VFX, but struggles for market dominance with 3ds Max and Maya	£4,485 (\$6,995)	Softimage	www.softimage.com	55	For power users, XSI 4 Advanced also throws in BatchServe and eight satellite render engines for free. Still no decent Nurbs or curve tools, though	9
STRATA 3D CX	Mac/PC	Long-established, if relatively niche, mid-price 3D package, now targeted at illustrators	£346* (\$695)	Strata	www.strata.com	55	A capable studio-quality package for a professional artist looking to learn Photoshop and work with a little 3D. Fair weaker for animation, however	7
TRUESPACE 6.0	PC	Another fixture in the increasingly crowded mid-price 3D software market, still widely used	£310* (\$595)	Curious Labs	www.curiouslabs.com	48	Improving animation and dynamics, version 6.0 addresses many of trueSpace's shortcomings. The direct interface now looks to have earned its name	8

TEXTURING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
BODYPAINT 3D 2	Mac/PC	Powerful specialist 3D painting package, used on increasingly high-profile VFX projects	£425 (\$745)	Maxon	www.maxon.net	47	Much quicker and simpler to use than the first release, and results can be stunning. Rich and well-documented, it's one for specialist texture artists	9
DEEP PAINT 3D 2	PC	Established 3D painting app, but not recently updated, and losing headlines to BodyPaint	£307* (\$595)	Right Hemisphere	www.righthemisphere.com	26	Powerful, but RAM hungry, and advanced mapping tools are presented in a separate app. Deep UV Not recently updated, however, unlike BodyPaint 3D	8
PAINT SHOP PRO 9	PC	Inexpensive 2D painting and bitmap editing app, unfairly regarded as just for hobbyists	£99.95 (\$120)	Corel	www.corel.com	57	Fantastic value for money, and users also a proper history palette. Does everything that Photoshop can, but lacks better alpha channel support	9
PHOTOSHOP CS2	Mac/PC	The de facto standard for texture painting and image manipulation amongst 3D artists	£529 (\$999)	Adobe	www.adobe.com	68	Still de rigueur for pro 3D work, with enough enhancements—such as support for 64-bit image—and new smart objects feature to make this the best version	9




TALKING POINT | Tiled in a trice

TILING TEXTURES BY hand is a tiresome, but unavoidable, part of 3D workflow. To turn a digital photo into something that can be seamlessly mapped across the surface of a model requires judicious use of Photoshop's Offset filter and Clone tool—plus skill and patience. But now, a new generation of software aims to take the tedium out of the process. Packages like *Texture Maker*,

Genetica and Allegorithmic's intriguingly capitalised *MaP | Zone* provide automated tools for generating tiled photographic or hand-painted textures, starting from custom source material or presets. Increasingly used on professional projects, such programs are real time-savers. But does the quality of their results match those achieved by hand? *Genetica 2* is reviewed on page 102

MODELLING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	SCORE	REMARKS
AMAPI DESIGNER 7	Mac/PC	Long-established modelling package, boasting a unique workflow and interface	£339 (\$479)	Eovia	www.eovia.com	40	A powerful modelling package, particularly for organic objects, although users will either love or loathe the interface, and documentation could be improved
AMAPI 7.5 PRO	Mac/PC	Amapi Designer's new bigger sibling, intended as a serious alternative to prior applications	£559 (\$779)	Eovia	www.eovia.com	62	Professional version of Amapi, aimed at industrial modelling. Superb Dynamic Geometry and better NURBS modeling but too much validation is tricky
AMORPHIUM	Mac/PC	Blob-based modelling package, very popular with hobbyists, but not recently updated	£76* (\$149)	El Technology Group	www.eltechnologygroup.com	35	A unique organic modelling package, only basic Sub-D tools, a slow render and a rather clunky interface, but what it does do, it does extremely well
FORM*2	Mac/PC	Powerful, long-established all-round modeller used on a wide range of industrial projects	£794* (\$1,495)	Autodesk+sys	www.form2.com	63	This is a premium modelling package - a hybrid solid and surface modeller with strong NURBS tools and decent render, it has a steep learning curve
MODELO	Mac/PC	Powerful, customisable and Mac-friendly new Sub-D modeller created by ex-NewTek staff	£359* (\$695)	Lexology	www.lexology.com	60	A relatively pricey addition to a crowded market sector, but one with a uniquely customisable modular design. Some early stability issues, but improving rapidly
RHINO 3	PC	Another well-established app at the lower end of the price scale for industrial modelers	£462* (\$895)	Robert McNeel & Associates	www.rhino3d.com	36	New NURBS tools and shading modes make this package a strong all-rounder, but soon need upgrading to keep pace with newer competitors, however
SILO	Mac/PC	New specialist Sub-D modelling package, inexpensive, and improving with every build	£56* (\$109)	Nevercenter	www.nevercenter.com	55	Has evolved into a promising app, following early stability issues. Quirky UV mapping, but good crossover between Sub-D and poly tools, and customisable
ZBRUSH 2	Mac/PC	Powerful intuitive organic modelling package, currently gaining very strong word of mouth	£252* (\$489)	Pixelogic	www.zbrush.com	63	A new interface helps redefine ZBrush 2 as a professional 3D sculpting tool. Still some quirks, but many unique tools and capable of handling millions of polys



TALKING POINT | Industrial-strength modelling

MODELLING PACKAGES DIVIDE into two camps: polygon and Sub-D modellers used on entertainment projects, and NURBS-based packages used in industrial design. Industrial modellers such as *form*2* or *solidThinking* 6.5 offer powerful toolsets, real-world precision, and, in the case of *solidThinking*, a vast construction history - new users may find the learning curve to be steep, though. *solidThinking* 6.5 is reviewed on page 98

CHARACTER AND FACIAL ANIMATION

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	SCORE	REMARKS
DAZ STUDIO	Mac/PC	Long-awaited new rival to Poser, currently still available as a free public beta	Free	DAZ Productions	www.daz3d.com	N/A	[Not previously reviewed in 3D World]
ENDORPHIN	PC	Innovative motion synthesis system using AI actors to generate artificial mo-cap data	£7,995 (\$12,795)	NaturalMotion	www.naturalmotion.com	67	Brilliant, technically accomplished, and fun to use, to boot. Generates data no real-world stuntman could achieve. Uses unique AI-powered virtual stuntmen
FACESTATION 2	PC	Turn video footage of an actor's face into instant animation for 3ds Max and Maya	£1,041* (\$1,995)	Digimation	www.digimation.com	33	Fast facial tracking, and can work with real-time capture. Resource hungry, however, and the quality of the results is only as good as your morph targets
LIFESTUDIO: HEAD 2.5 STANDARD EDITION	PC	Customise a pre-built head model, apply instant lip synch and export as OBJs or an AVI	£910 (\$599*)	LifeMode Interactive	www.lifemode.com	44	Good texturing tools, but some tweaking is required to finesse the lip synch generated automatically from an audio track. Manual work needed tidying up
LIFESTUDIO: HEAD 2.5 PRO ARTIST	PC	Create and rig facial models for 3ds Max and Maya, then apply instant lip-synching	£990 (\$1,914*)	LifeMode Interactive	www.lifemode.com	44	As the Standard Edition, but with the power to import/export directly to Maya or 3ds Max. One of the first proper tools of this kind, a time-saver for games artists
MESSIAH: ANIMATE	PC	Powerful standalone animation package, also available as a plug-in for major 3D packages	£1,295 (\$2,395)	pmG Worldwide	www.projectmessiah.com	29	[Reviewed at version 3] A comprehensive character animation solution with very fast IK and deformation and powerful expressions. Now reduced in price
MESSIAH: STUDIO	PC	Messiah:animate's larger parent product, adding in full rendering capabilities	£518* (\$995)	pmG Worldwide	www.projectmessiah.com	58	Not an industry-standard application (and lacks modelling tools), but offers intuitive, fast and powerful GI rendering and is capable of some amazing results
MOTIONBUILDER 6 STANDARD	Mac/PC	Innovative 'motion design' package, originally developed by Kaydara, now owned by Alias	£532* (\$995)	Alias	www.alias.com	46	[Reviewed at version 5] Powerful FK/IK blending and real-time playback, plus a new Story Window to keep things organised. Quickly becoming indispensable
MOTIONBUILDER 6 PRO	Mac/PC	Pro motion-editing app, an industry standard for blending mo-cap and keyframe data	£2,244* (\$4,195)	Alias	www.alias.com	62	High-end tools include mo-cap data editing and data retargeting. It might be a tad expensive, but it's probably the best character animation tool around
POSER 6	Mac/PC	The original figure-posing application, also used for pre-viz and simple animation work	£157 (\$249)	Curious Labs	www.curiouslabs.com	65	Despite a few niggles, well-chosen workflow enhancements and a lot of new content make Poser 6 a vital upgrade. Still undisputed champion in market sector

RENDERING (packages previously reviewed in 3D World only)

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	SCORE	REMARKS
ART-LANTIS 4.5	Mac/PC	Old-school architectural rendering package, now awaiting an update to version 5.0	£349	Abvent	www.abvent.com	13	This interactive package is capable of high-quality results, and provides decent renders quickly, without fuss. Few fine controls, though, and not recently updated
BRAZIL R/S	PC	Powerful 3ds Max renderer, used in both stills and effects work, soon to be ported to Maya	£617* (\$1,200)	Splutterfish	www.splutterfish.com	31	Fast and robust, with an excellent shader system, delivering high-quality results. Bucket rendering allows fast distributed rendering across a network
FINALRENDER STAGE-1	PC	Another powerful 3ds Max renderer, often used in architectural visualisation work	£415* (\$795)	Cebas	www.finalrender.com	43	Powerful new HyperGI engine and caustics tools, but exceptional results require a lot of tweaking. Some instabilities, particularly in distributed renders
TURTLE	Mac/PC/THX	Third-party Maya renderer designed to offer a new balance of speed and image quality	£619* (\$1,199)	Illuminate Labs	www.illuminate-labs.com	55	Bristlingly fast raytrace rendering. Currently best suited to architectural work, due to lack of support for particles and Paint Effects, but developing rapidly

LANDSCAPE GENERATION

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
BRYCE 5.5	Mac/PC	The original landscape generator now back in development after several years in limbo	£70* (\$170)	DAZ Productions	bryceda.3d.com	68	Not the most powerful app on the market, but a very affordable one. Bryce is easy to use, and 5.5 offers faster rendering and extended OpenGL support	9
HOLOWORLD 3	Mac/PC	Unusual landscape-generation app with a unique emphasis on creating entire planets	£109* (\$199)	Pandromeda	www.pandromeda.com	60	A unique approach to landscape generation that tends to polarise opinion. Great tools, but hard to control fine details and the interface can be frustrating	6
VUE 5 ESPRIMO	Mac/PC	Landscape generation's current market leader	£171 (\$249)	e-on Software	www.e-onsoftware.com	59	Rightly the best-selling landscape generator. Very realistic results, and easy to master. New GI rendering is slow, however, and still no proper animated water	9
VUE 5 PRO STUDIO	Mac/PC	The Vue 5 Esprit core augmented by four add-on modules (also purchasable separately)	£274 (\$399)	e-on Software	www.e-onsoftware.com	65	A well-rounded set of add-ons. Although some features should arguably be in the core app, Mover (Poser import) and Botanica (plant editing) are of real value	8
VUE 5 INFINITE	Mac/PC	Pro-level edition of Vue, aimed at architectural and VFX work. Formerly known as Vue 4 Pro	£411 (\$599)	e-on Software	www.e-onsoftware.com	66	Powerful, intuitive and configurable. Vue 5 Infinite leads where other landscape apps dare not follow. Relatively pricey, but capable of incredible-quality results	8
WORLD CONSTRUCTION SET 6	Mac/PC	Technical, but very powerful, package well suited to tasks requiring real-world accuracy	£258* (\$500)	3D Nature	www.3dnature.com	13	[Reviewed at version 5] A versatile and comprehensive landscape program, but the interface is unimpressive with a steep learning curve and no simple mode	8
WORLDBUILDER GENESIS	PC	A popular alternative to the Vue family, more high-quality results at an affordable price	£92* (\$179)	Digital Element	www.digi-element.com	57	Beautiful end results, and fairly easy to use. Now very much optimised for 3ds Max, though, while some of the new features and the tutorials lack polish	7
WORLDBUILDER PRO 4	PC	Higher-end edition of WorldBuilder, tailored to professional artists rather than hobbyists	£360* (\$649)	Digital Element	www.digi-element.com	57	A terrific program with many unique features, particularly for plant and water animation, and great user control over fine detail. But see reservations above	7

COMPOSITING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
AFTER EFFECTS 6 STANDARD	Mac/PC	One of the most popular desktop compositing packages, usable even for broadcast work	£565 (\$699)	Adobe	www.adobe.com	47	Updated video painting features, plus the addition of Photoshop's Liquify tool make for a major upgrade. Still the same cluttered old interface, however	8
AFTER EFFECTS 6 PROFESSIONAL	Mac/PC	As After Effects Standard, plus some high-end tools, worth investing in for professional work	£915 (\$999)	Adobe	www.adobe.com	47	Motion tracking, enhanced keying and masking, particle systems and 16-bit colour space tools make this a better option than AE Standard for serious work	8
COMBUSTION 4	Mac/PC	Autodesk's own desktop compositor, unsurprisingly often teamed with 3ds Max	£850 (\$995)	Autodesk	www.autodesk.com	65	Very strong basic tools, well-organised workflow and good compatibility with 3D apps, but poorer editing app integration and a relatively steep learning curve	9
DFX+ 4	PC	Cut-down modular version of Digital Fusion, much beloved of PC-based lightweight artists	Priced by module	eyen Software	www.eyenonline.com	43	Most of the improvements in version 4 are cosmetic, but still a powerful, affordable, node-based compositing app. Good visual effects and 3D tools	8
DIGITAL FUSION 4	PC	One of the first PC-based desktop compositing packages, but still relatively little known	£2,579* (\$4,995)	eyen Software	www.eyenonline.com	43	Not limited to 8-bit colour space, unlike DFX+, making this a powerful - and underrated - PC-based compositor, capable of scaling to film-quality work	8
SHAKE 3.5	Mac/Linux	Powerful node-based desktop compositor used often in film and broadcast effects	£2,099 (\$3,999)	Apple	www.apple.com	54	The most powerful desktop compositor on the market, with the possible exception of Digital Fusion version 3.5 adds long-awaited morphing tools	8

CAMERA TRACKING AND MATCH MOVING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3D-EQUALIZER 3	Mac/Linux	Venerable (and Oscar-winning) tracking package, still widely used in film effects	On request	Science-D-Visions	www.3dequalizer.com	N/A	[Not previously reviewed in 3D World]	N/A
BOUJOU 3	Mac/PC/Linux	One of the first major alternatives to 3D-Equalizer, popular in the effects world	£5,199* (\$10,000)	2d3	www.2d3.com	54	Version 3 is still a powerful tracking package, but this much-delayed and largely unsurprising update may prove a disappointment to long-term buyers/users	6
BOUJOU BULLET	Mac/PC/Linux	Cut-down wizard-driven version of Boujou, intended for small-to-medium-sized facilities	£1,497* (\$2,500)	2d3	www.2d3.com	64	Aimed at smaller post facilities, Bullet has good basic 2D and 3D tracking and accepts any-resolution footage, but can prove unreliable with zoom shots	7
MATCHMOVER PRO 3.1	Mac/PC/Linux	Another of the old guard of desktop tracking applications, recently reduced greatly in price	£2,062* (\$3,500)	Realviz	www.realviz.com	63	A highly evolved version of the software, with powerful 2D and 3D tracking tools. No optical flow facility, however, and the pro-cap module costs a lot extra	7
PFFHOE	Mac/PC	A powerful low-cost DV tracking application, named by 3D World readers (see issue 61)	£49 (\$94*)	The Pixel Farm	www.thepixelfarm.co.uk	62	With fast and robust auto-tracking, PFFhoe is great value for money and ideal for its target audience of aspiring digital filmmakers and independent artists	9
PFFMATCH	Mac/PC	PFFTrack's younger sibling, offering a useful range of tracking tools at an entry-level price	£600 (\$1,160)	The Pixel Farm	www.thepixelfarm.co.uk	57	Great price, although only broadcast-resolution footage in AVI and QT formats is supported. Good user control in version 1.5, but no proxy-resolution tracking	8
PFFTRACK 3	Mac/PC	First of a new generation of lower-priced broadcast-quality camera tracking packages	£3,000 (\$5,000)	The Pixel Farm	www.thepixelfarm.co.uk	66	Fast, powerful, and now boasting true object tracking, PFFTrack 3 is arguably the most complete, and completely useful, tracking system currently available	9
SYNTHESYS	PC	Astonishingly affordable new all-round tracking package, getting word-of-mouth	£180* (\$340)	Anderson Technologies LLC	www.andersontech.com	49	An incredible range of tools for the price. Outperforms costlier rivals on many tasks, but work flow can be quite cumbersome for those used to other apps	9

TALKING POINT | The expanding world of pre-viz

AS GAMES AND movie projects demand ever more complex 3D work, pre-visualisation and digital storyboarding are becoming a key part of the production workflow. Software developers are now beginning to colonise

this emerging market, with programs like *StoryViz* (listed overleaf) and *Antics Pre-Viz* staking out territory in the grey area between live-action footage and CGI. **Antics Pre-Viz is reviewed on page 100**

WEB 3D AND MULTIMEDIA

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
ANARK STUDIO 3	PC	Established authoring package for interactive 3D presentations	£1,835* (\$4,439)	Anark	www.anark.com	64	A powerful solution for large-scale, real-time 3D, but the new higher price and absence of Mac support will leave some existing users high and dry	8
AXLEDGE 2	Mac/PC	All-in-one authoring and online animation package, described as 'like Flash in 3D'	£100* (\$555)	MindAvenue	www.minda-venue.com	31	Powerful all-round authoring package, with good animation and interaction editing tools; import and export options much improved since version 2.0	8
CULT3D	varies	Free software suite for exporting 3ds Max and Maya models in interactive online format	Free	Cycore	www.cycore.com	12	[Reviewed using the 3ds Max exporter] Relatively straightforward to use, with a good range of options in the exporter. Very much more stable in recent builds	7
DIRECTOR MX 2004	Mac/PC	De facto standard for authoring multimedia CDs/DVDs, now incorporating simple 3D tools	£809 (\$1,939)	Macromedia	www.macromedia.com	37	Greatly improved layout, but few new 3D tools since version 8.5. Havok physics and useful web output tools, but programming needed for complex effects	7
QUEST3D 2.1 ENTERPRISE	PC	Real-time 3D authoring tool, also available in cheaper Lite and Professional editions	£1,035* (\$1,999)	Act 3D	www.quest3d.com	48	Full-featured all-round authoring app, but fairly easy to master; no programming required. Can become unmanageably cluttered on complex projects, though	8
SWIFT 3D 4.5	Mac/PC	3D to vector graphics conversion tool, one of the most regularly updated interactive 3D apps	£128* (\$229)	Electric Blue	www.electricblue.com	58	Version 4.5 of this 3D to Flash application offers 50 per cent faster render times than version 4, plus a major overhaul of the vector rendering engine	8
WIREFUSION 4 ENTERPRISE	Mac/PC/Unix	Visual authoring tool for interactive 3D content, also available in cheaper editions	£1,195 (\$1,995)	Demicon	www.demicon.com	56	Straightforward all-round authoring solution; no need for programming or specialist plug-ins to view output. Slightly unorthodox, but quick to master	8

OTHER TOOLS

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3D S.O.M.	PC	Image-based modelling software, one of the newer, less expensive additions to the market	£299 (\$582*)	Creative Dimension Software	www.3dsom.com	41	Requires photos of an object against a marker grid like D-Sculptor or iModeler, but offers greater automation and can use uncalibrated images for texturing	8
D JOINER	PC	Photo-stitching software, less widely known than Stitcher, but suitable for many projects	£100 (\$575*)	D-Vision works	www.dvision.com	20	In good hands, it does what it's meant to do. But it suffers from poor usability, and a lack of automated features. Documentation is disappointingly slim too	7
D-SCULPTOR 2 STANDARD	PC	Image-based modelling software, another mid-priced package, aimed at home users	£500 (\$960*)	D-Vision works	www.dvision.com	11	[Reviewed at version 1] A good tool for creating 3D models from images, and cheaper than ImageModeler. Much slower and not as powerful, however	8
DEEP EXPLORATION 3.5	PC	File conversion software, capable of tackling a wide range of file formats, including CAD	£77* (\$149)	Right Hemisphere	www.righthemisphere.com	45	Well-designed model viewer, file conversion and asset management utility. Includes basic 3D model editing tools, rendering and Shockwave output	8
FRAMEFORGE 3D STUDIO	Mac/PC	Storyboarding software, first of a new wave of apps aimed at pre-viz and 3D storyboarding	£180* (\$349)	Innovative Software	www.frameforge.com	55	Extremely easy to use, and scales to even high-budget movies. Specialised props only available as add-on packs, though, and complex scenes can be sluggish	9
IMAGEMODELER 4	Mac/PC	Image-based modelling software, one of the earliest desktop photogrammetry packages	£712* (\$1,380)	Realviz	www.realviz.com	19	Gives professional-quality results, and can cope with architectural-sized objects, but requires considerable user input. Quality also comes at a price	7
IMODELLER 3D 2.1 WEB	Mac/PC	Image-based modelling software, creates 3D models for online use in a Java-based format	£70* (\$140*)	JZR	www.imodeller.com	58	Like the pro version but cheaper. With the right objects, this can produce quite impressive results. Wait until the release of version 3, which supports concavity	6
IMODELLER 3D 2.1 PRO	Mac/PC	Image-based modelling software, all-purpose app, exporting to a range of 3D file formats	£352* (\$675*)	JZR	www.imodeller.com	58	Impressive and more powerful than its main rival, D-Sculptor, it has too many limitations, it may be easy to learn, but it's quirky and frustratingly unstable	6
AUGRAF 4.1	PC	File conversion software, with support for batch conversion and CAD data	£256* (\$495)	Airo	www.airo.com	21	[Reviewed at version 4] This affordable package performs a demanding task exceptionally well and is relatively affordable. User interface is a tad dated	6
PARTICLEILLUSION 3	Mac/PC	Particle software, generates 3D-style effects in 2D, niche, but used on many pro projects	£206* (\$399)	WonderTough	www.wonder-tough.com	41	A fast, flexible alternative to conventional 3D particle effects, and fits well into production pipelines. Would be improved by more specific forces and user control	8
POLYTRANS 4	PC	File conversion software, cut-down version of Augraf, lacks batch conversion facilities	£108* (\$205)	Okino	www.okino.com	2	[Reviewed at version 1] Not your everyday 3D program, but a very useful one that all 3D artists should consider. Conversion doesn't always run smoothly	7
REALFLOW 3	Mac/PC/Unix	Fluid simulation software, the current market leader for realistic fluids, used in film projects	£620* (\$1,200)	Nexant	www.nextant.com	50	Sets the benchmark for power and controllability for fluid-simulation systems, but at a price. Still some stability and UI issues, particularly in the Mac version	7
STITCHER 4.1	Mac/PC	Photo stitching, the leader in its field, though some tools are absent in Photoshop	£164* (\$309)	Realviz	www.realviz.com	40	Incredibly powerful and versatile. Not a quick solution, but stands above the competition in quality of results, although that quality comes at a price	7
STORYVIZ	PC	Previsualisation software, the latest in a new wave of pre-viz and storyboarding apps	£1,158* (\$2,100)	Realviz	www.realviz.com	50	Far more flexible and open-ended than simple storyboarding apps, and includes a timeline and keyframe animation facilities. A serious investment, however	8

CONTACT US | Have we missed anything?

THINGS CAN CHANGE very quickly in the world of 3D software. If you've spotted an error in this buyer's guide, please contact us at the email address below. However, before writing in, please bear the following points in mind:

1. All prices exclude VAT and shipping, plus any optional extra costs, such as printed manuals or maintenance contracts.
2. Asterisks denote currency conversions from a list price at the current rate of exchange when the entry was added to the buyer's guide.

3. Due to limitations of space, not all sectors of the 3D market can be covered each issue. We aim to vary our listings from month to month.

4. Space also precludes us from listing the thousands of plug-ins currently available.

5. The verdict column contains a synopsis of our last published review. In most cases this will refer to the current version of the software. Where this is not so, it should be clearly noted.

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studio profile



Information for 3D artists seeking work at visual effects companies. This issue: **Splash Damage**

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Splash Damage is an independent games studio dedicated to online gaming, and has rapidly established itself as one of the leading First Person Shooter developers in Europe. It's currently hiring for a new game based on the *Doom 3* engine

NUMBER OF FULL-TIME EMPLOYEES

22

TYPICAL NUMBER OF FREELANCERS

just the one! The majority of its staff are full-time

TYPICAL NUMBER OF FULL-TIME RECRUITS PER YEAR

Splash Damage has taken on six new members of staff in the last year

LOOKING FOR USERS OF WHICH 3D SOFTWARE?

- *3ds Max*
- *Maya*
- *LightWave*

KEY SKILLS FOR EMPLOYEES

Varies by position, but generally a strong understanding of *Quake III* technology, a familiarity with the publicly-known *Doom 3* engine technology features; 2D art experience, such as texture creation

DESIRABLE SKILLS FOR EMPLOYEES

Again, varies by position, but a good understanding of gameplay/game flow; experience with *Photoshop*; *Quake III* Shader experience; a formal education in art or animation; strong traditional art skills and digital art skills (modelling, texturing and lighting); knowledge of emerging PC graphics technologies

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BUSINESS END

Each issue, our panel of experts answers the legal and financial questions of freelancers and small studios. This month, we ask...

"Can he sue me?"

Recently, I've received a letter from a law firm on behalf of a person claiming that I copied his work. Really, it seems to be a fuss about nothing. Everyone takes their inspiration from somewhere and this guy is just jealous that my work is more polished than his. However, I would like him to call off the lawyers. Any ideas?

PETER VINK, VIA EMAIL

When considering this question, it's important to bear two things in mind. Firstly, in the UK (under English law), for a work to be lawfully protected by copyright, it must be an original literary, dramatic or artistic creation. Secondly, copyright and design rights (the latter relating to 2D and 3D designs) are negative rights, in that they're rights to prevent others from copying your work; they aren't rights that give you anything in itself. Therefore, two artists can take as their inspiration the same source, and if they create substantially similar work, it will not be an infringement.

Back to the case in hand. As you've already received a lawyer's letter on the subject, your first action ought to be to write a holding letter in return, stating that you'll take legal advice on the matter and that you'll reply as soon as you're able to.

But before you seek legal advice, consider the following issues that are relevant to an allegation of copyright/unregistered design right infringement. The first question is straightforward: did you actually copy the work of the person who is accusing you? Might you have copied it without doing so consciously? Copying can take many forms but, for legal purposes under English law, the owner of the earlier right claiming copyright will need to show that substantial copying has taken place. By 'substantial', the courts analyse the work according to quality and not to quantity. For example, there's a common myth that says, if you copy an original work and change at least 10 parts of the original, you'll escape a claim for infringement, or that such copying doesn't amount to infringement. This is nonsense. If you copy an element of an original work and that element can be said to go to the heart of the work (in other words, it's that element that makes it original), you will still have infringed the earlier work.

Secondly, did you create the work with anyone else or did anyone create it on your behalf? If this is the case, you'll need to speak to your collaborator (or to the person who created in on your behalf) to ascertain if they created an original work or if they infringed the work of a third party. As a matter of good housekeeping, you should involve this person in defending the allegation of copying that you've received.

Remember, the protection is afforded only to original works. Perhaps you are able to demonstrate that the earlier work is not in itself original. Perhaps what you have both directly copied is a work that is out of copyright. Also, think about what you actually did in creating your work. Where did you draw your inspiration from? Have you seen the earlier work somewhere?

A good tactic in responding to an allegation of copyright infringement is to ask the person who's making the allegation to set out exactly why they think they own the rights concerned, and when the work was created. You should always ask for evidence, too, such as files or other material that can document the process of creation of the work. If the person asserting copyright cannot show that they own the copyright in the first place, they won't have any rights to assert against you.

This works both ways: as a designer, it's crucial to keep safe the 'design story' of each piece of work that you've ever created. Assuming that you've done this, you ought to be able to show the development of your work from blank canvas to finished work of art. This is your way of showing that yours is an original creation.

KEEP A 'DESIGN STORY' OF ALL YOUR WORK FOR MOMENTS SUCH AS THIS

The two works should then be analysed side by side. Sometimes, a design can give a similar overall impression but not actually be a direct copy, and therefore not an infringement of any rights. Also, don't do the hard work for the person making the allegation. The burden of proof lies with them and it's for them to demonstrate copying and not the other way around. If their claim doesn't appear to stack up in writing, the chances are it won't do so in a court.

Fortunately, most matters of this nature settle out of court, so you're unlikely to find yourself in the dock. However, you should treat any such dispute with due consideration and act promptly, because ultimately, it's any rights holder's right to sue another party for infringement.

Lee Gage is an intellectual property solicitor at leading media and entertainment firm Harbottle and Lewis LLP. He advises creative businesses on all areas of IP and IT law issues. www.harbottle.com

OTHER RESOURCES
The UK Patent Office
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You can see how Anders was influenced by *The Jetsons* in this image from CGNetworks' Grand Space Opera Challenge

Anders Ehrenborg

We speak to this truly versatile artist who is equally at home in Sweden or Paris - with clay or LightWave 3D modelling tools. He discusses his unique approach to art and reveals his alter ego in the process **BY BEN VOST**

Tell us a bit about yourself

My name is Anders Ehrenborg, aka fellah or Elton Banana. I grew up in a land of Vikings, with polar bears walking on the streets! Actually, no Vikings or polar bears - a fun yet sadly false rumour about Sweden. As far as I can remember, my passion in life has always been to create things out of anything that I find: wood, fabric, clay, paper, cans, guitars, and so on, but this is an interview focused more towards 3D graphics. It wasn't until the beginning of 2000 that I stumbled across this wonderful art form.

A few years later, with more knowledge under my belt, two friendly French people and I started up a studio called AhAhAh! Studio (<http://mapage.noos.fr/ahahah-studio/>). We worked on a few series together over a period of two years or so, some of the time over the web and the rest at a studio in Paris, using *LightWave* and *3ds Max*. Some of the TV series we worked on are now in preproduction. Some stopped almost before they started, but everything we did was fun and instructive to work on.

When I came back to Sweden at the end of 2004, I started freelancing. I worked with AOKI (www.aoki.fr) where I did high polygon characters for the latest Xbox 360 game by Tetsuya Mzuguchi, *Ninety-Nine Nights*. Other duties included the modelling and design of characters for various TV series. I've also worked with other companies, such as Polydor and NFL Films. I'm now working

with my friend Charles Bernaert (aka, John Banana) at our freelance studio, Digital Banana (<http://digital-banana.com>).

When did you first start using LightWave?

I guess it was sometime around the summer of 2000. I remember that, just after I'd seen the software in action at a friend's place, I went out and bought the book *LightWave Applied* by Dave Jerrard. I was so impressed with what could be done that I said to myself "I'll probably never be able to do something of quality like this, but I'll give it a try!"

What do you like about the package?

The fact that it's so 'light'. It loads very fast, the interface is clean and easy to navigate, and there's transparency between the software and the artist, which makes it easy to do what I want to do without having to think much about technical matters.

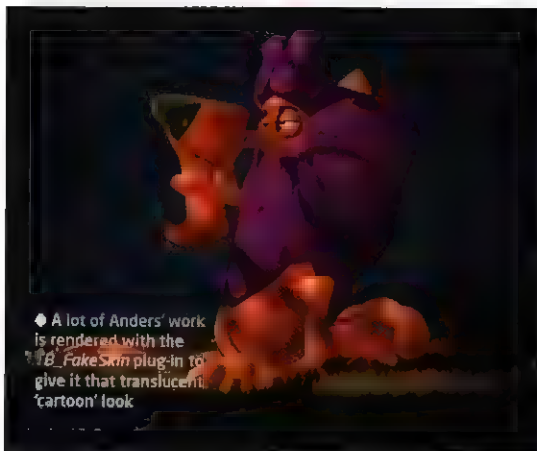
What spec machine(s) are you using it on?

AMD Athlon 64 3500+, 2GB RAM, GeForce Ti4800

Are there any plug-ins you wouldn't be without?

Since version 8.x, there's really no plug-in that I can't be without. I rarely use plug-ins these days, actually, though some are great for





a few occasions. One that I found just a few days ago is TAZ Pipe, which creates geometry around splines with real-time feedback also like UV Imaginator for saving out UV maps at the desired resolution with the colours and file format that I want. For layout, I really like TB_FakeSkin. I use it quite a lot for my cartoon characters to get a soft look that renders fast.

Do you have a particular favourite fantasy artist who inspires your work?

For fantasy art, I tend to like the old artists, such as Rolf Lidberg and John Bauer. I find their work believable and descriptive. Maybe it's because they believed, in the early 1900s, that these kinds of creatures existed. Or maybe it's because they didn't add big weapons and women with large boobs.

Other artists that inspire me include Ahmed Guerrouache (www.nanoneen.com), Alexandre Boudon (<http://mapage.noos.fr/totitch/>) and Steve Lambe (www.stevellambe.com). Also TV series like *Samurai Jack* and *The Jetsons*. I tend to lean towards the 1950s cartoon style.

What made you choose 'Fellah' as your online forum identity?

That was from the beginning of my 3D adventure. Some friends and I were starting a demo group and needed a name to use on the net, but it wasn't so easy to decide on one. Finally, we let faith decide. A friend took a dictionary, opened a page and pointed!

You mentioned working with clay. Are you a sculptor as well?

No, I wouldn't classify myself as a sculptor. I've just been playing around with Super Sculpty at home and took some sculpting courses at school.

How does working in 'true' 3D compare to working with Modeler?

'True 3D' is... messy! If you want to do it well, you have to do a lot of preparation with wire skeletons, and there's no undo button. But working with clay makes you think about the artistic part rather than the wireframe below or the tools around. That's why I often tell people who are interested in 3D to first sculpt a little before they dive straight in.

Do you speak French from your time in Paris?

'Oui, un peu!' That's about it. I know the basics. If I read something



with 'normal' content, I can usually understand a little and figure out the main gist, but when someone starts to speak, I get totally lost.

A lot of your designs are from other people. Do they supply you with 3D models (either real or digital), or just sketches that you turn into 3D?

I've never had a 3D model or a maquette provided as reference. Most of the time, I just have a single image (normally a concept image in three-quarter perspective with a wacky pose). From that I try to draw the character myself in different views, to get to know it better before I start to make it in 3D.

Is there a lot of back and forth between you and the designer?

Yes, definitely. That's one of my favourite parts and I've learnt a lot from these little chats with the designers. There used to be more talk than there is now, though. After a while you learn the basic mistakes.

Which element of LightWave work do you enjoy the most: modelling, lighting, texturing, animating, rendering or coding?

I would have to be boring and say all of them except animation and coding, as I don't do much of that at the moment. It depends on what mood I'm in, or if I've been doing one thing for too long. Too much of any one thing makes it boring, whatever it is. If I had to choose only one, I would say modelling.

Do you ever do any photorealistic work, or is all your stuff 'cartoony'?

Yes I do. For example, two or three months ago, I modelled realistic-looking characters for game cinematics. And one of the projects I'm working on now includes modelling and texturing five realistic characters for a TV series. My most current work that's not under NDA is a personal attempt at realism I did about two years ago. I say 'attempt' because, when I look back, I always see something that could have been changed to make it more photorealistic.

Do you ever do any cel-shaded work, or is all your stuff the 'soft look'?

I did some tests for a few of the TV projects we were making with AhAhAh! Studio. One of the projects included cel-shaded characters. I also did a stagecoach for another of the TV series projects.

What are you working on now?

I'm working on various projects at our freelance studio Digital-Banana (www.digital-banana.com). I can't show or say much as it's under NDA, but you can see some stuff by visiting the site. ●



ABOUT THIS ADVERTORIAL

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Making The Mantis Parable Part Four

In the final part of this series, Cyan Worlds' Art and Visual Design Director, Josh Staub, has to consider how best to market his movie for festival directors



FINALLY, TWO YEARS AFTER its inception, my independent short film, *The Mantis Parable*, was complete. No longer would my mysterious project, previously viewed and evaluated only by select family and friends, be shrouded in secrecy. It was time for *The Mantis Parable* to go on the road.

With over a thousand film festivals taking place around the world each year, finding the most relevant venues for my film was simply overwhelming. I created a festival spreadsheet to keep track of all the ones to investigate and then began to surf the web.

My first stop was the list of Academy-Recognised Short Film Festivals. Chances are I won't be on stage receiving an Oscar next year for Best Animated Short Film, but I figured if the Academy recognised these

festivals as 'legitimate', then they were certainly good enough for *Mantis*, and if it happened to win one of these festivals, it would be placed on a list from which the Academy draws its nominees. My wife and I went to each festival's website and added the pertinent information to the spreadsheet: application date, festival screening date(s), cost of entry, required format, and so on.

THE SHORT FILM SHORTLIST

The list contained roughly 50 festivals, some of which we struck off immediately because it was obvious that *The Mantis Parable* didn't fit their programme due to filmmaker nationality restrictions or format. For others, it was a little tricky. Many appeared to have no recognition of animated short films at all, which could mean that animated films didn't have much chance of being accepted. Still, a festival that appeared to be primarily oriented towards live action might be open to accepting an animated film to add variety to its line-up. Format was another issue to consider. While many festivals were capable of screening on BetaSP, DigiBeta, HDCam or even DVD, some would only exhibit on film, which for me was prohibitively

expensive. Creating a film transfer of my eight-minute short would cost roughly \$10,000. Needless to say, the film only festivals didn't make my list. I also ventured over to the websites of some recently completed animated short films I was familiar with, such as *Love Tricycle* and *Blue*, which yielded a smattering of additional festivals that seemed appropriate.

Last but not least, I joined Withoutabox (www.withoutabox.com), a free service dedicated to helping filmmakers sort through the festival chaos. It provided plenty of information and helped me determine which festivals were a good match for *Mantis*. After setting up my account, Withoutabox stored all the relevant information for my project, including a press kit, which most of the festivals require. The typical press kit consists of the following: two or more hi-res images from the film, several synopses of the film, a director biography and a director photo. [A sample

press kit template from *The Mantis Parable* is available on this issue's CD.] Most importantly, many festivals associated themselves with Withoutabox, which enabled me to submit digitally at a reduced submission rate. Many overseas festivals are free to enter, but most in the US charge between \$30 and \$60 per submission. For an independent filmmaker like me, without a festival budget, a \$5 discount per submission provided some much needed relief.

THE WAITING GAME

Spreadsheet in hand, I began to prepare my submissions. I spent a night or two designing the DVD menu and packaging, and then burned a handful of DVDs using Adobe Encore. My first submissions went to the Winnipeg International Film Festival, the Seattle International Film Festival and the Athens International Film Festival. While Winnipeg and Athens are mid-sized festivals (Athens being an Academy qualifier), Seattle is huge. Widely considered one of the top 10 film festivals in the world, it's also the largest of its kind in the United States, attracting approximately 180,000 attendees a year. Then I waited.

ON THE CD

EXCLUSIVE ACT II CLIP
[THE MANTIS PARABLE -
PART IV CLIPMOV]

This is an exclusive clip
from Act II where the
mantis and caterpillar meet.

PRESS KIT TEMPLATE
[TMP - SAMPLE PRESS KIT
TEMPLATE]

A basic version of *The
Mantis Parable* press kit.

THE MANTIS PARABLE
8x10 POSTER PRINT

A hi-res poster, similar to
the cover of *The Mantis
Parable* festival submission
DVD, for your viewing/
printing pleasure.

IT'S SURREAL WATCHING YOUR
MOVIE ON A LARGE SCREEN,
SURROUNDED BY PEOPLE



● A VIP pass provides filmmakers like Josh with access to every film and festival party

● Serving as film synopsis, advertisement and business card, *The Mantis Parable* postcards helped Josh spread the word about the film while attending a festival

The time between submission and notification – acceptance or rejection – can be long, sometimes requiring a wait of six months or more because most festivals don't notify filmmakers until a month or so before the festival actually begins. Added to my anxiety was the fact that I had uncovered a horrifying statistic: most filmmakers claim a success rate of about 10 per cent for overall festival acceptance. In other words, submit to 100 festivals and you'll only make it into 10 of them. I prepared for the worst.

Fortunately, I didn't have long to wait before the phone started ringing. The Sunday after I submitted my film, I received a call from the festival director in Winnipeg saying he loved *The Mantis Parable* and wanted to screen it in June. The following weeks offered more surprises: Athens, yes! Seattle, yes! Al told *The Mantis Parable* was accepted into its first five festivals. The first rejection came in the form of an email from Cannes. I would discover later that the odds of acceptance to Cannes were downright ridiculous, with 3,000 short film submissions and nine acceptances, none animated. Encouraged by *Mantis'* early success, I cheerfully shipped off a handful of new submissions and prepared for the upcoming screening in Seattle.

THE FIRST VIEWING

The Mantis Parable would be shown as part of a Family Short Film Programme of 10 features, and would take place in the central festival venue in downtown Seattle called The Egyptian. This is a huge old theatre complete with Egyptian carvings and paintings, a

giant screen and seating for about 500. My family and I arrived early, nervous and excited to see *The Mantis Parable* on the big screen for the first time. About half an hour before the program started, a line of attendees began to form and we greeted each one with a *Mantis* postcard I had designed and professionally printed the week before. They were thrilled to learn that one of the filmmakers was going to be in the audience, and wished me luck. A short time later, while sitting next to my wife, our five-year-old daughter and three-year-old son, the lights dimmed and the show began. Great films like *In the Rough*, *Backwards Boy* and *Catching Kringle* screened alongside my little film. It's totally surreal to watch your film on a huge screen, surrounded by people eating popcorn and drinking soda. I'll never forget that moment.

Three weeks later, I attended another screening, this time at The Winnipeg International Film Festival, where *The Mantis Parable* was awarded Best Animation – my first award. When I arrived home from Canada that evening, I would discover that in Seattle, *The Mantis Parable* had been awarded Fourth Runner-Up for the prestigious Corden Space Needle Award for Best Short Film of the entire festival! All the hard work and late nights were a distant memory now, since it was clear that *The Mantis Parable* was a hit.

Since this article was written, *The Mantis Parable* has been selected to screen at the Palm Springs International Festival of Short Films – the 'Oscars of short films' according to some

TIMELINE

MARCH 2005

Two weeks after acceptance to Winnipeg, The Seattle International Film Festival (the largest in the US) invites the film. By the end of the month, it will receive five acceptances (with no rejections) to screen in festivals around the globe.



APRIL 2005

The Mantis Parable receives its first rejection, from the Cannes Film Festival.

MAY 2005

The Seattle International Film Festival screens *The Mantis Parable* as part of its Family Short Film Programme. At the conclusion of the festival, the film receives a Fourth Runner-Up for the Golden Space Needle Award (Best Short Film).

JUNE 2005

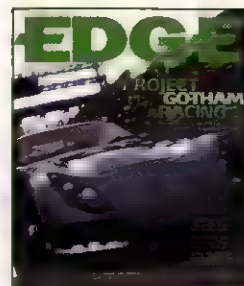
The Mantis Parable wins Best Animation at the Winnipeg International Film Festival.



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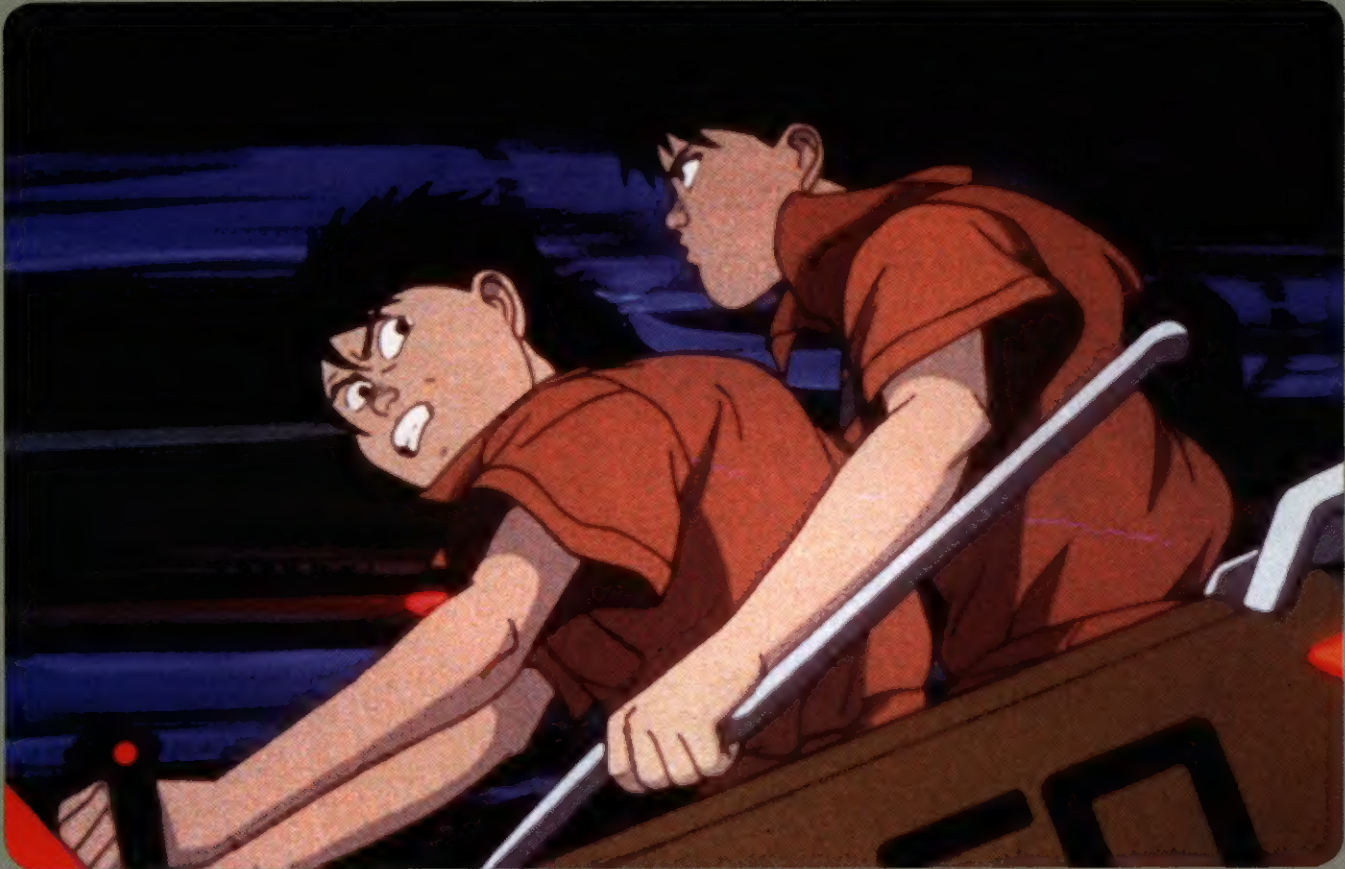


Image © Kobal

INSPIRATIONS

"It's not just anime - it's a great science fiction movie." The legendary 3D artist **Pascal Blanché** reveals his love for the legendary Akira



"AKIRA CHANGED EVERYTHING."

In 1988, when I was 17, a friend showed me book eight of the original manga. I rushed home and read it until two in the morning, then re-read it over and over again. I was living in Marseille at the time, and I'd travel to Paris, almost 800km away, to find out if there were any new releases. I was totally addicted.

Both the manga and the anime had a huge influence on my work - my approach to framing, to lighting a scene and even to animating characters. My taste for merging flesh with mechanical elements also comes from this period. The most recognisable influence anime had on artists of my generation was its believable engineering.

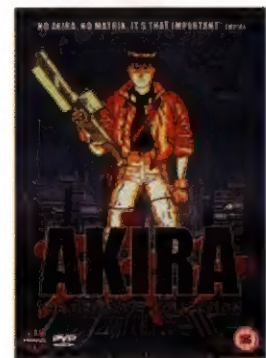
But what really makes the movie special is its attitude. In *Akira*, boys and girls aren't little dolls with

big eyes and blue hair - they're ordinary Japanese kids. Secondly, it's not just anime - it's a great science fiction movie. It has guns, car chases, mad scientists, explosions, monsters and romance. What else could anyone want?

If Katsuhiro Ōtomo was to remake *Akira* now, I don't think he'd change a thing. The only annoying thing about it is that it feels as if the animators ran out of money towards the end. I've heard that most of the budget was used in the first 40 minutes; if you look closely, the effects and compositing are simpler in the final section. And, as a huge fan of the manga, I would have loved it to be longer. Mr. Ōtomo, if you're reading these words..."

Pascal Blanché is currently Art Director at Ubisoft Canada. He was recently awarded the prestigious *Exposé 3 Grand Master* award for his art www.3diuvr.com/pascalb

● A typically dynamic frame from *Akira*, Katsuhiro Ōtomo's groundbreaking 1988 anime. "*Akira* is on a different level of quality to other animated movies," says Pascal Blanché. "It made CG professionals the people we are today."



SEE FOR YOURSELF

The animated version of the 2,000-page manga of the same name, *Akira* is often credited as 'the movie without which there would be no *Matrix*'. A two-DVD box set is available via Manga Entertainment

Poser 6

Exclusive trial version

PC/MAC Try Poser 6's new rendering features with this brand-new demo

AVAILABLE FOR THE first time on a magazine CD, this demo version of the popular character-posing package *Poser 6* is your first chance to try out powerful new rendering features, such as Toon Outline, Ambient Occlusion, Image-Based Lighting and Subsurface Scattering.

Released commercially in March, version six adds new main male and female figures, updated libraries of content, and improved OpenGL hardware acceleration and *Flash* support.

The demo version is restricted to a single character with limited poses and props. Saving and exporting 3D data is disabled, texture sizes are limited to 1,024x1,024 pixels, while render size is limited to 640x640 pixels.

In his *Poser* masterclass, which starts on page 56, illustrator Adam Benton puts the software through its paces, explaining how to recreate our anime-inspired cover character. (Note: because of the restrictions on the demo, the full commercial version of *Poser 6* is required to follow the tutorial, though you can use the trial to explore the techniques set out. www.e-frontier.com)

FACTFILE™

FORMAT
PC / Mac

MINIMUM SYSTEM
Windows 2000 / XP or
Mac OS X 10.2+,
500MHz processor
256MB RAM, 500MB
disk space, OpenGL-
enabled graphics
card, and an Internet
connection for Content
Paradise

DEVELOPER
e frontier

WEBSITE
www.e-frontier.com

USING THE CD

GETTING STARTED

On a PC, this CD should auto-run when inserted into your CD drive. If not, run '3dw.exe'. To toggle autorun on and off, use the Control Panel on your computer. On a Mac, choose 3DWClassic or 3DWiOSX to suit your operating system.

USING THE INTERFACE

The disc interface requires Windows 98, Me, 2000, XP or Mac OS 8+. You'll also need an active Internet connection to make full use of the interface. For best results, ensure you're using a version 3 web browser or better.

POINTS TO NOTE

- Some software may require free registration over the internet or by phone
- Some software may not be available in all territories
- Values quoted are the original prices for which the software was sold (including packaging and manuals).

DAZ anime content

Worth over \$120

PC/MAC A selection of pre-built anime-themed clothing and characters, for use in Poser or DAZ Studio

TO COMPLEMENT THE demo version of *Poser 6* included on this month's CD, DAZ Productions has kindly supplied a range of commercial content for its pre-built anime character, *Aiko 3*. This resource kit contains everything you'll need to create your own Japanese-inspired imagery, including clothing, poses, morphs and maps.

The same content was also used to create this month's fiery cover character, as you can discover by following artist Adam Benton's step-by-step guide, which starts on page 56. *3D World* readers can also save 25 per cent when they upgrade from the content on the disc to the *Aiko 3 Professional Bundle*. For more details, turn to page 62.

The DAZ website also contains a wide range of other commercial content for *Poser* or the company's own free figure-posing software, *DAZ Studio*, including characters, animals, props and vehicles, plus a wide range of supporting morphs and maps. www.daz3d.com

FACTFILE

FORMAT
PC / Mac

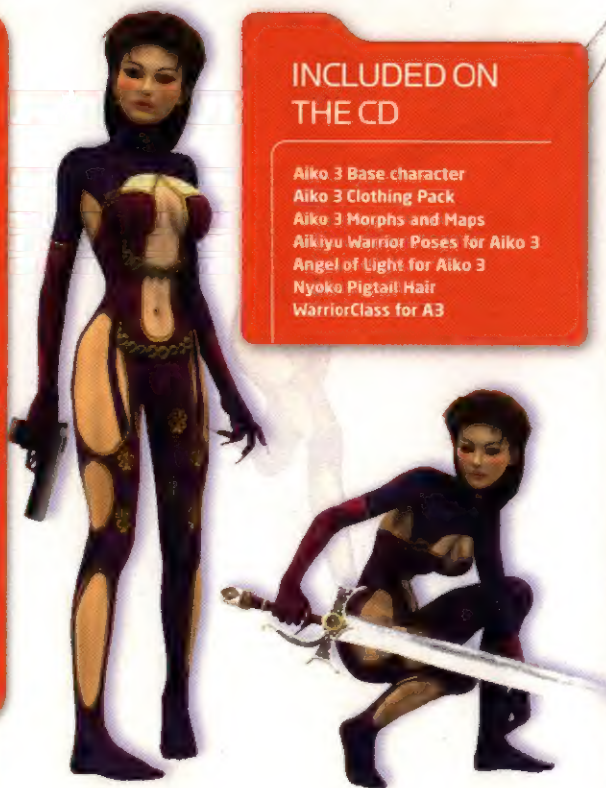
MINIMUM SYSTEM
Requires *Poser* or
DAZ Studio. Exact
specifications may
vary. For more details,
see website below

DEVELOPER
DAZ Productions

WEBSITE
www.daz3d.com

INCLUDED ON THE CD

Aiko 3 Base character
Aiko 3 Clothing Pack
Aiko 3 Morphs and Maps
Aikiyu Warrior Poses for Aiko 3
Angel of Light for Aiko 3
Nyoko Pigtail Hair
WarriorClass for A3



FULL CD CONTENTS | What's on the 3D World disc this issue

**VIDEO TUTORIALS****NOISE IN DIGITAL FUSION**

Two supplementary videos comprising 14 minutes of video training, recorded for the CD by leading CGI artist Fred Pienkos. The videos cover the use of noise layers in *Digital Fusion*, and come with supporting files. More training by the same tutor is available via KURV studios.

Note: *QuickTime* is required to view these movies
www.kurvstudios.com

LEAD CONTENTS
POSER 6 (EXCLUSIVE DEMO)
DAZ PRODUCTIONS ANIME CONTENT
WORTH OVER \$120

For full details, see facing page

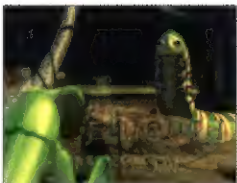
**OTHER RESOURCES****35 TEXTURES**

A collection of JPEG-format images from the 3D for TV Texture Collection 2005, produced by artist Christof Wurzer. Subject matter includes backgrounds, skies, walls, doors and ground planes. These textures are also licensed for use in commercial projects

www.geocities.com/chriswurzer

**CD MISSING?**

For a replacement, please contact your newsagent

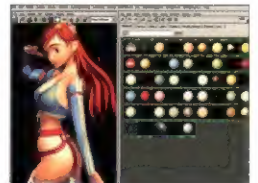
**DIARY OF A SHORT**

Exclusive material from Josh Staub's *The Montis Parable*, including example promotional material used for marketing a short film

Full article: page 118

SUPPORTING FILES

Full-size screenshots, project files and other resources to accompany the tutorials and Q&As printed in the magazine this issue
 Magazine contents: page 4

**TROUBLESHOOTING**

THIS IS A FUTURE TECHNOLOGY CD-ROM. This disc has been thoroughly scanned and tested at all stages of production, but – as with all new software – we still recommend you run a virus checker before use and have an up-to-date backup of your hard drive. While every

effort has been made to keep this CD virus-free, Future Publishing Ltd cannot accept responsibility for any disruption, damage and/or loss to your data or computer system that may occur while using this CD or the programs and data on it. Consult your network administrator before installing software on a networked PC.

If you are having difficulties using the interface or content, please visit Future Publishing's reader

support website at www.futurenet.co.uk/support. On this regularly updated site, you'll find solutions to many commonly reported problems. If you still experience difficulties, please email our reader support team (support@futurenet.co.uk) or call +44 (0) 1225 442244 and ask for coverdisc support. Please note that we can only provide technical support for the installation of software. Unfortunately, we cannot give

in-depth help on the applications included on this CD, or on your hardware or operating system. For software support-related issues, please contact the relevant product's developers. We also regret that we are unable to provide serial numbers over the phone. Future Publishing can only provide technical support for this cover disc for a period of six months after this magazine's on-sale date.



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